The Mini-14 Exotic Weapons System

REVISED EDITION

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Warning

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Introduction

The Mini-14 was introduced in 1972 by Sturm, Ruger & Company, Inc., available only to law enforcement agencies. It was about 1976 that the rifle was finally made available to the civilian market. Its classic design was based on the M1 Garand and the formidable M14 automatic rifle issued by the U.S. Army in the 1950s. The basic difference here, however, is the modified and simplified gas system used in the Mini-14. The trigger mechanism and bolt design are similar to those of its predecessors but the Mini-14 is smaller and lighter in overall configuration, and thus much handier to employ. The Mini-14 uses the standard .223 military round originally developed for the U.S. M16 assault rifle.

A few years after the introduction of the original Mini-14, Ruger developed and marketed a selective-fire version of the semiauto Mini-14 rifle. It was offered in two models. The AC-5.56 comes with a standard stock, bayonet lug, and flash hider. The AC-5.56K features a "paratroop"-style folding stock, a short 13-inch barrel, and a flash hider. The folding stock for the standard semiauto Mini-14 has just been offered recently to the civilian market, and is available in both blued or stainless steel models.

The selective-fire AC-5.56 and AC-5.56K have selector setting provisions for semiauto, three-shot burst, and full auto; the selector setting starts forward and moves counter-clockwise for various settings. The selector device is positioned at the right top rear end of the receiver, just behind the rear sight. The selector lever has a spring-loaded plunger protruding from its top that must be depressed before the selector can be moved from one index to another. The the plunger locks the selector lever positively in the desired position on the index recess cut in the receiver frame. The usual safety located on the trigger guard is operated separately for putting the weapon into "safe" or "fire" position. Both of the selective-fire versions are manufactured in blued or stainless steel models, as are the semiauto Mini-14s.

As most military arms collectors are well aware, the selective-fire Mini-14s are never offered to civilian purchasers except as dealer samples to Class II weapons permit holders. Most of these weapons can be found in police and security forces inventories here and abroad. Very few, if any, can be found in the hands of civilian collectors. If you were lucky enough to find one, it would be very hard to say just how much it would cost you (assuming you have the proper license to own one). These rifles are not rare, just impossible to get through regular channels. One must be thankful, however, that at least the standard semiauto Mini-14 was released for the civilian market.

As far back as the mid-70s, a number of independent weapons accessory producers were marketing bolt-on accessories for the Mini-14 rifle. The rarity of the original factory folding stock and high-capacity magazine, originally offered only in the police market, created a tremendous demand from thousands of Mini-14 owners in the country. The rising popularity of big bore assault-type rifles in a civilian market dominated by imports is another factor that contributed to the demand for Mini-14 accessories, especially in light

of the skyrocketing prices on imported submachine guns.

The popularity of the civilian submachine gun market has reached its peak in the 80s following the initial boom in exotic weaponry. Dozens of independent accessory producers came into the limelight, such as Choate Machine & Tool Company, Ram-Line, Inc., and Eagle International, Inc. These companies, along with many other independent producers, came up with many excellent accessories ranging from folding stocks to high-capacity magazines, as well as ingenious bolt-on dress-up kits that truly upgrade the Mini-14 to its maximum potential. Today, the sportsman and collector have many accessories to choose from when putting together a custom Mini-14 weapon configuration.

As we enter the 90s, a greater number of independent accessory producers is entering the scene with newer ideas to offer. It has been predicted that bullpup-type weapons are going to be the guns of the twenty-first century. This is becoming apparent with the initial adoption of bullpup-type weapons by various modern countries, such as England, which has adopted the SA-80; France with its FAMAS; and Austria and Australia, which have adopted the STEYR AUG. In addition, Germany has developed the G11 rifle with its caseless ammunition, Finland has the Valmet M82, and even the People's Republic of China (PRC) has now come up with its own version of a bullpup rifle based on the well-proven Kalashnikov assault rifle (from which the Finnish M82 was also derived).

The Muzzelite Corporation makes a true "state-of-the-art" bullpup stock for the Ruger Mini-14 and 1022 rifles. Its design was inspired by the British SA-80 bullpup assault rifle previously adopted by the British forces to replace the old FAL used by NATO armed forces since 1950. The stock is molded of nylon-reinforced impact-resistant polymer, which can withstand rough use or adverse climatic conditions. The stock consists of two halves (right and left), which envelope the action of the gun and most of the barrel. The result is a rifle with a very compact 26 1/2-inch length with a full-length barrel. The Muzzelite Bullpup stock is an unbeatable contender for those who opt for a twenty-first-century upgrade for the Mini-14; it costs about $96. The kit comes with all the necessary hardware and installation instructions, and includes a matching scope mount and sling. The installation requires no alteration to the gun.

Many law enforcement agencies here and abroad have purchased the Mini-14 for department use in the semiauto format. The selective-fire conversion system described here can provide a cost-effective alternative to purchasing new selective-fire weapons. The cost of manufacturing the automatic connector unit should be no more than $10 if mass-produced, and the process requires only a minimum of tooling and know-how. A department armorer can easily build the necessary part with common workshop tools. The new Muzzelite two-piece "clamshell" bullpup stock is ideally suited for use with the conversion system described in the text. With the exception of cutting a window or slot for the selector lever so it can be moved from one index to the other, no additional inletting will be required, since the inside of the stock is already hollowed out. Furthermore, the straight stock configuration and short overall length adds to the versatility and maneuverability of the Mini-14, especially in tight quarters.

For maximum firepower, the MWG 90-round drum magazine is an unbeatable part of this setup. Law enforcement personnel must take a close look at the advantages of this configuration. A compact assault weapon with lots of firepower is ideally suited for urban operations and for dealing with drug traffickers who are usually armed with the latest in high-tech weaponry acquired on the black market.

For civilians, ownership of machine guns is limited to those who were licensed prior to the 1986 Gun Control Act. One must never attempt to convert his weapon to full-automatic fire without first acquiring the proper license from the federal government. Conversion of such weapons to automatic fire is absolutely illegal unless prior approval from the BATF is acquired. The mere possession of any conversion parts that will enable the weapon to fire full-automatic is also prohibited and carries a severe penalty. The conversion must be done legally—it is the only way the law will protect you and your interests. Be warned! This book is written strictly for reference and educational purposes only.

1. The Selective-Fire Conversion System

The selective-fire conversion system employed in this project was carefully designed and perfected so that no alteration or extensive modification is needed. I will hereafter refer to the mechanism which converts the Mini-14 to selective-fire function as the automatic connector.

The basic system is simplicity itself. The only modification needed requires the drilling of two small holes in the rear right end of the receiver frame, where the automatic connector unit will be installed. If you do not wish to drill holes in your receiver, you can simply silver solder the connector group mounting plate to the receiver. If you then wish to remove the plate, simply melt the solder, and the connector plate will easily come off. This latter system of installation is not used here as it is not practical for quickly mounting or removing the automatic connector.

When the connector unit is not in place on the receiver, it is advisable to put another set of screws in the connector mount plate screw holes that are drilled into the receiver frame. These alternative screws must be flush with the external surface of the frame. This is necessary if you do not wish to have the two screw holes visible. Note that the front hole has a small groove underneath where the slide retaining lug travels. This slot must not be blocked by the screw. To prevent this, the alternate screw for the front hole must be fully tightened without the connector in place. Mark the area of the screw exposed in the groove with a fine felt marker and remove it with a needle file. After removing the marked area, retighten the alternate screw and make sure that the groove is clear for the slide retaining lug. Any rough surface on the screw must be filed off, as it may cause the slide to malfunction during battery.

The rear alternative screw must also be tightened without the connector in place and its end must also be made flush to the external surface of the receiver. After both the alternative screws are trimmed and fitted, blue the screws so that their color will blend well with the receiver. This will make the drilled holes almost unnoticeable.

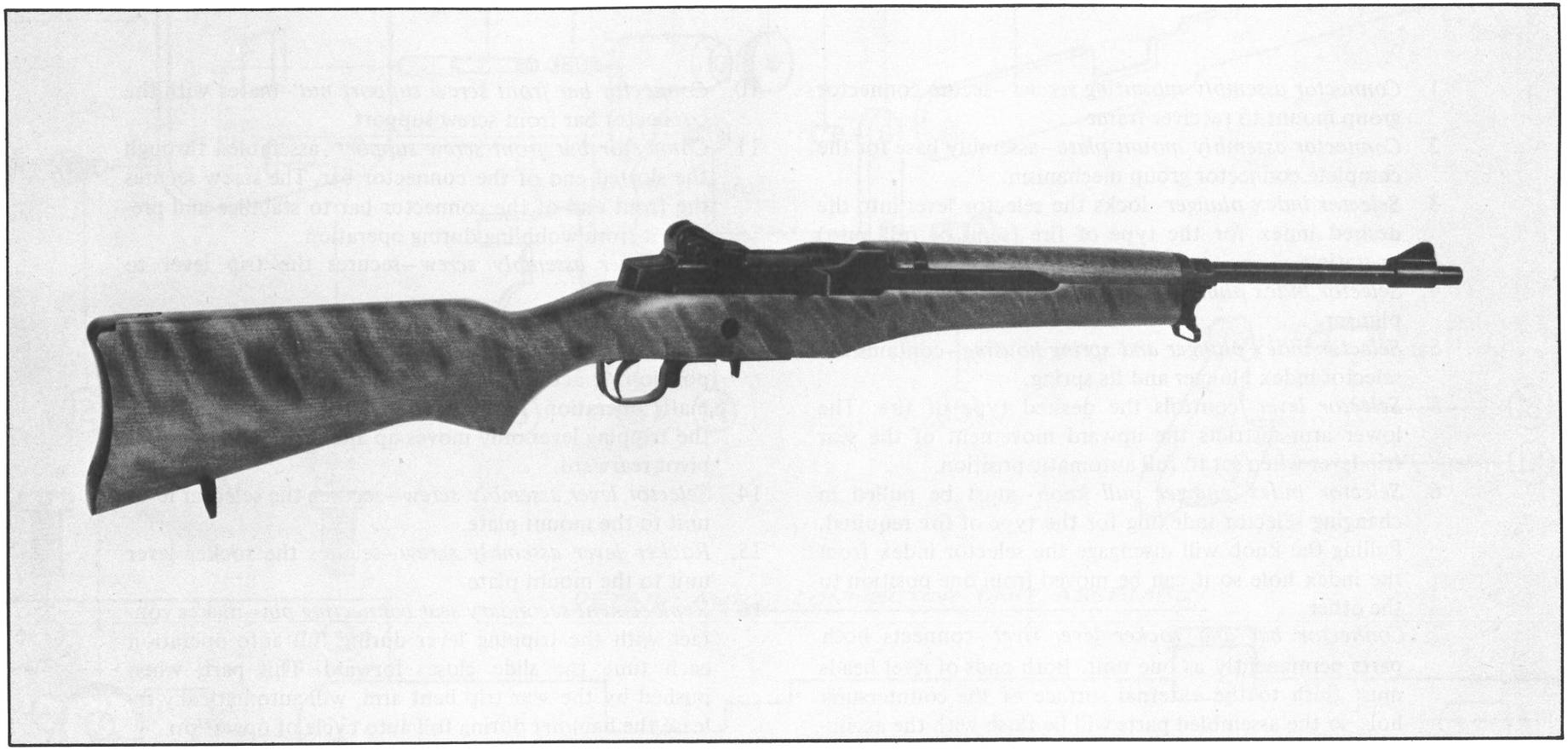
Since a small portion of the Mini-14 stock must be whittled away to accommodate the connector unit, it is wise to purchase an alternate stock strictly for the connector unit. provision. Keep the original factory stock for your regular shooting activity or for hunting purposes.

Carving the wood stock to accommodate the connector unit must not be hastily done. Whittling the wood should be patiently done with the help of the correct tools. This is absolutely necessary since you are not working with just an ordinary piece of wood. You have invested quite a few dollars in it, so do the job right—slowly, but surely. If you will be using just ordinary carving tools or chisels, it is advisable that you first practice carving on blank wood. Once you are familiar with the amount of wood to be removed, proceed to working on the actual stock. You must note that the seating

of the connector unit within the stock cutout must be flush, yet not excessively tight. If the connector unit is seated too tightly, it may malfunction during the cycle of operation. It is also important not to remove more wood than is necessary to seat the connector unit, as this may cause looseness around the connector assembly. This will permit the entrance of dirt or other foreign matter into the connector and receiver.

With the weapon fully assembled and the connector installed, only the selector assembly housing tube and knob should be visible. A short semicircular or square cut for the selector movement during indexing is also cut into the upper part of the stock where the selector lever is positioned. Again, it is necessary not to overcut this selector clearance cut on the stock as we want to minimize the exposure of the selector mechanism as much as possible. This will give your weapon a more professional appearance and also protect its receiver components from exposure to dirt for more reliable performance during rough weather conditions.

Going back to the connector system detail, you will note that the only Mini-14 parts that are modified consist of the stock and the receiver frame which is drilled with two small holes. Besides fabricating the connector unit, a new replacement sear will be made with a connecting pin protruding from the right on its upper leg. This can be easily built by hand just like the other parts of the connector. It is imperative, however, that the exact dimensions of your original sear are precisely copied. Your sear has been precisely adjusted in the factory for positive hammer-secondary sear engagement. Therefore, your dimensions should be exact copies of it. The new replacement secondary sear will satisfactorily function with the other original trigger mechanism with or without the connector kit and can be left in as desired. This arrangement is like an M1 carbine using an M2 sear.



An original Mini-14 as it comes from the Sturm, Ruger and Company, Inc. factory.

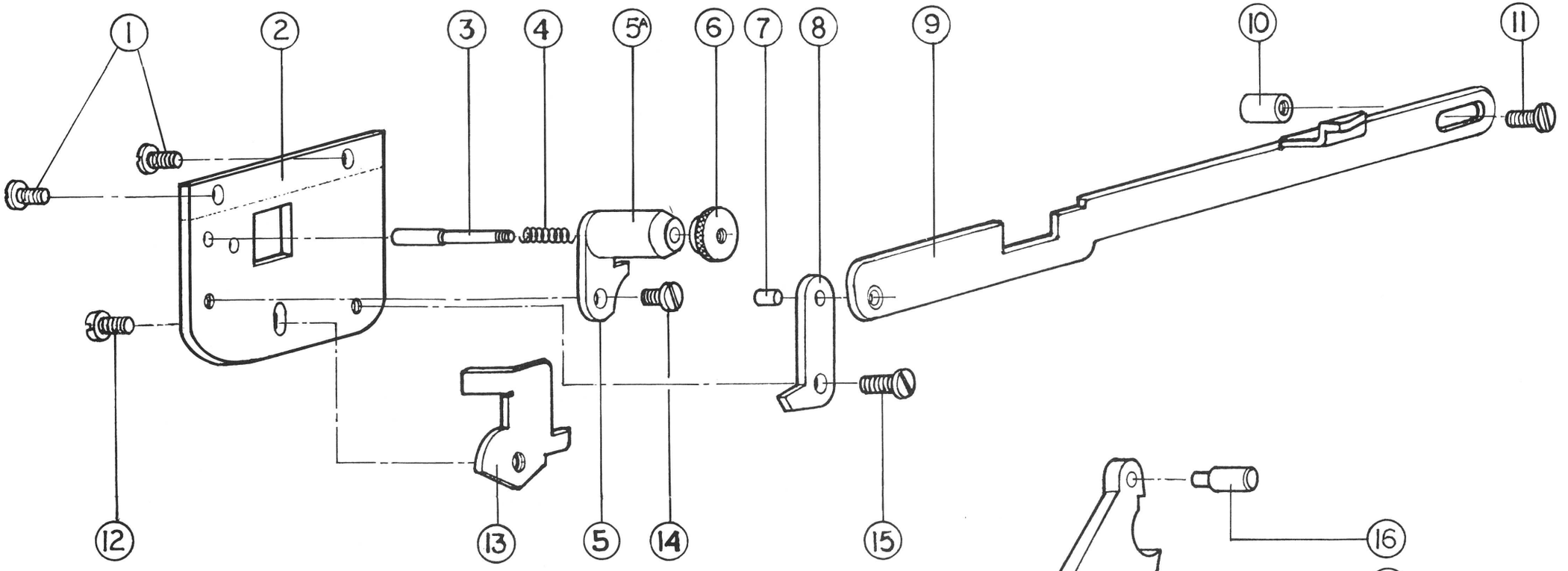
2. Automatic Connector Design

1. *Connector assembly mounting screws*—secure connector group mount to receiver frame.
2. *Connector assembly mount plate*—assembly base for the complete connector group mechanism.
3. *Selector index plunger*—locks the selector lever into the desired index for the type of fire (semi or full auto) operation.
4. *Selector index plunger spring*—powers the selector index plunger.

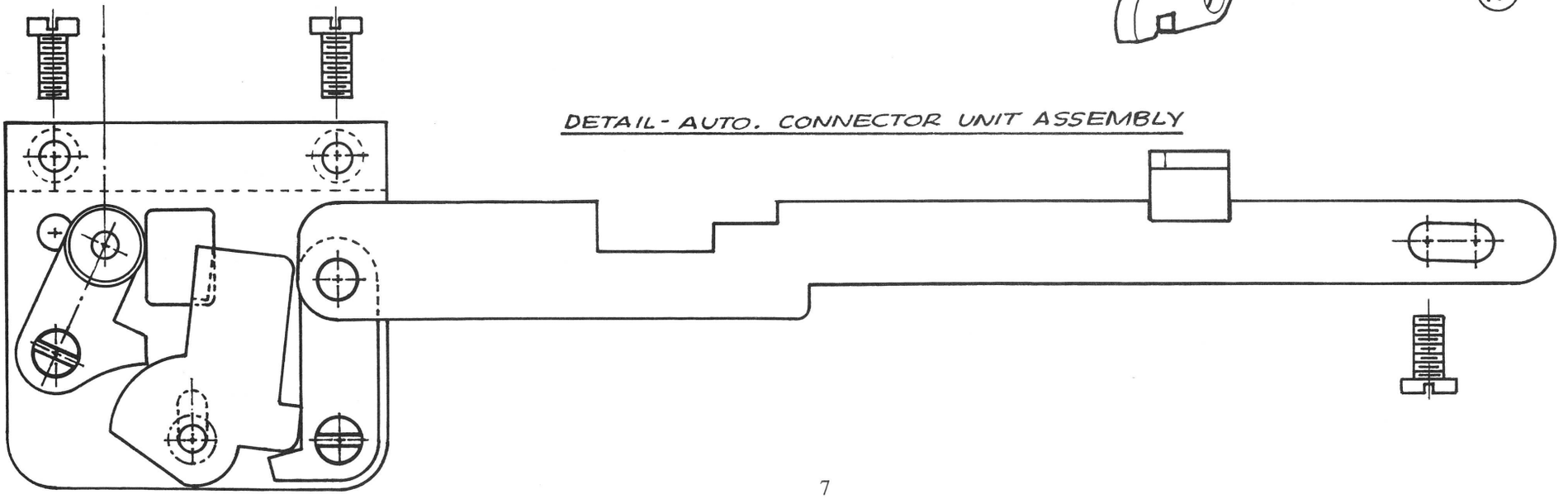
5a. *Selector index plunger and spring housing*—contains the selector index plunger and its spring.

5. *Selector lever*—controls the desired type of fire. The lower arm restricts the upward movement of the sear trip lever when set to full automatic position.
6. *Selector index plunger pull knob*—must be pulled in changing selector indexing for the type of fire required. Pulling the knob will disengage the selector index from the index hole so it can be moved from one position to the other.
7. *Connector bar and rocker lever rivet*—connects both parts permanently as one unit. Both ends of rivet heads must flush to the external surface of the countersunk hole so the assembled parts will lie flush with the assembly plate when assembled.
8. *Rocker lever*—acts as a bridge between the connector bar and secondary sear trip lever.
9. *Connector bar*—the key part of the connector group. The bar is operated solely by the slide cocking handle during forward recoil.
10. *Connector bar front screw support nut*—mates with the connector bar front screw support.
11. *Connector bar front screw support*—assembled through the slotted end of the connector bar. The screw secures the front end of the connector bar to stabilize and prevent it from wobbling during operation.
12. *Trip lever assembly screw*—secures the trip lever to mount plate.
13. *Sear trip lever*—pushes the secondary sear connecting pin rearward when the selector lever is set at full auto position. It acts as a mechanical trigger during full automatic operation. If the selector lever is set at semiauto, the tripping lever only moves up and down and does not pivot rearward.
14. *Selector lever assembly screw*—secures the selector lever unit to the mount plate.
15. *Rocker lever assembly screw*—secures the rocker lever unit to the mount plate.
16. *Replacement secondary sear connecting pin*—makes contact with the tripping lever during full auto operation each time the slide closes forward. This part, when pushed by the sear trip bent arm, will automatically release the hammer during full auto cycle of operation.
17. *Replacement secondary sear*—replaces the original factory sear so that it can be operated by the connector group mechanism for selective firing. The replacement sear need not be removed, as it will function as well as the original with or without the connector group mounted on the receiver frame.

MINI 14 AUTOMATIC CONNECTOR PARTS ASSEMBLY



DETAIL - AUTO. CONNECTOR UNIT ASSEMBLY



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Connector Semiautomatic Functioning

Assume that your newly converted Mini-14 has been fully assembled and adjusted with its operation perfected. A loaded magazine is inserted in normal fashion until the magazine latch locks the magazine in place. Pull the cocking handle all the way to the rear and release it. Do not assist the cocking handle on its forward motion as your finger may get caught between the handle and the connector bar hook. This may cut your finger.

Caution: Always watch your finger before cocking the slide as there is a small protrusion of the connector bar hook under the cocking handle. Make sure that this protrusion is rounded and highly polished to prevent injury when cocking the slide. Reduce the protrusion as much as you can, but make sure it has enough connection for the underside of the cocking slide to make positive contact during the cycle of operation. Do not overfile the contact area as it may break when made too thin.

After releasing the cocking handle forward, it will strip the first round from the magazine and feed it to the chamber. The hammer is now cocked for the first shot. If you are not ready to fire, put the safety on "safe." Pull the selector index knob to disengage it from the indexing hole if your selector is set at full automatic and you want to fire the weapon on semiauto. The selector index knob must have enough protrusion outside the stock so it can be conveniently manipulated when the need arises.

When the selector index is set on the semiauto setting, the following sequence of operation takes place. Make sure that the safety is set to fire position once you are ready to shoot the rifle.

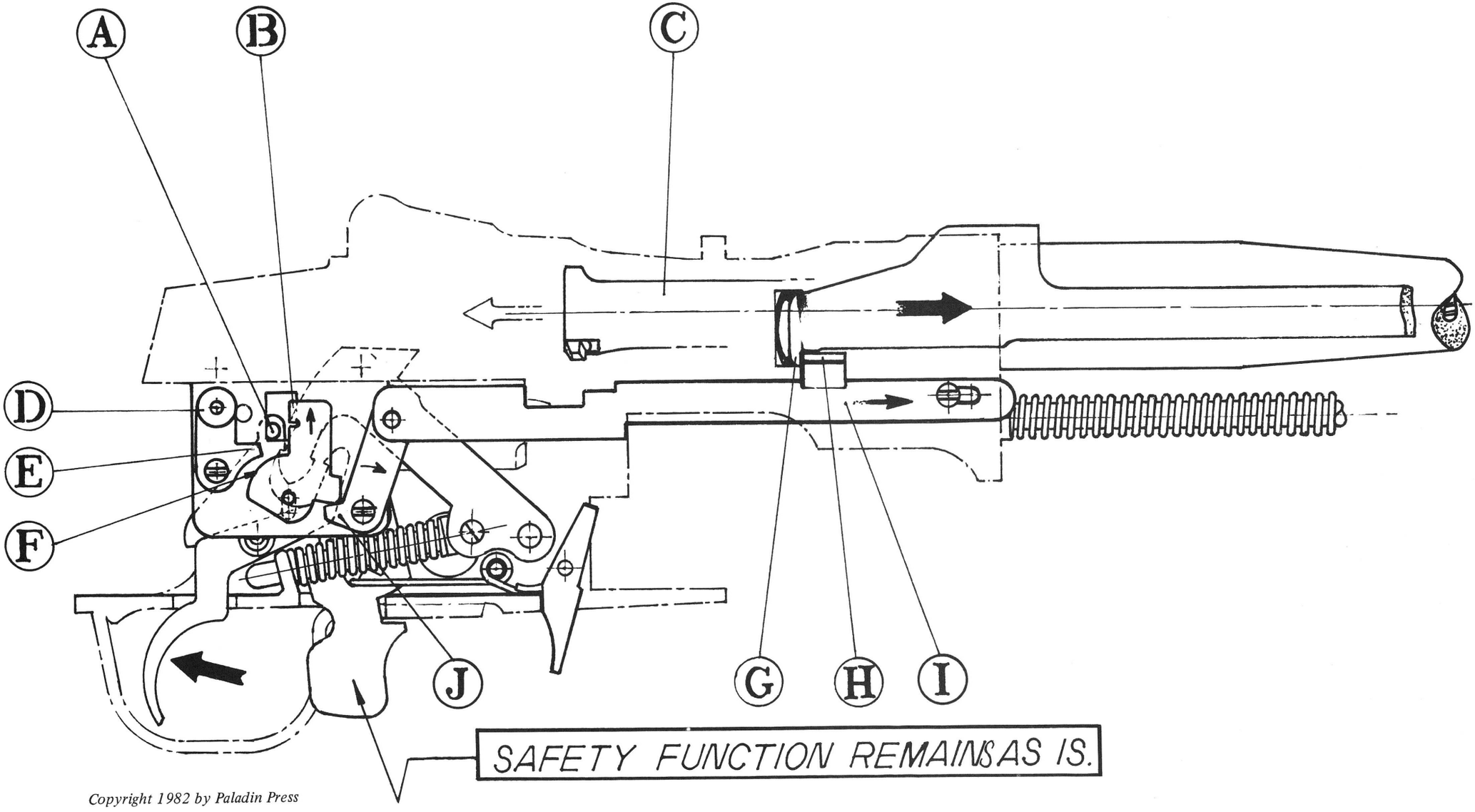
Pressing the trigger will fire the first shot. Gas pressure from the exiting bullet will be bled off through the gas tappet hole forcing the slide to move rearward and unlocking the bolt from its seating recess in the receiver frame. After the bolt has unlocked, it will recoil with the slide rearward to accomplish extraction of the empty shell, ejecting the empty shell as soon as the shell clears the chamber. On full recoil rearward, the bolt (C) will recock the hammer. Note that on the rearward recoil of the slide, the connector bar will also move about 3/16 of an inch to the rear. This rearward movement of the connector bar is caused by the action of the secondary sear pin (A) pressing against the bent hook (B) of the tripping lever under sear spring tension.

The trip lever toe will then transfer the action to the rocker lever toe (J) while pivoting frontward. This action will then force the rocker lever to pivot rearward, bringing with it the connector bar which is riveted to it.

Assuming that the pressure on the trigger is maintained after the first shot is fired, the full rearward recoil of the bolt recocks the hammer and will automatically be caught by the secondary sear hook. Note that in this operation, the selector arm (E) is not making any contact with the circular shoulder (F) of the tripping lever. This gives the tripping lever an allowance for up-and-down movement due to the elongated slot in the mount frame through which its retaining screw is assembled. Since the selector lever arm (E) is not controlling the upward movement of the tripping lever, the rear pivoting action necessary to trip the secondary sear connecting pin (A) by the trip lever is avoided.

After full rearward recoil of the slide and bolt (C), extraction and ejection of the empty shell, and recocking of the hammer, the slide under recoil spring tension will force the bolt (C) to move forward. It will strip a new round from the magazine and chamber it. The bolt will again be forced by the slide to lock into its locking recess in the receiver. After the bolt has fully locked, there is still about one-half inch remaining for the slide to fully accomplish its rearward travel. On the last 1/4 to 3/16 inch before the slide comes to full stop, the lower part of the slide (G) will make contact with the connector bar hook (H), and the hook will be forced to move forward until the slide comes to its full stop rest position.

SEMI AUTO. FUNCTIONING



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The action of the connector group will now be reversed from previous rearward recoil of the slide and bolt. As soon as the slide cocking handle underside (G) pushes the connector bar hook (H), the rocker lever will then pivot forward as pulled by the connector bar. The rocker lever toe (J) will then make contact with the trip lever toe, forcing it to move upward since the movement is not restricted by the selector lever arm (E). The trip lever bent hook (B) in this action has not made any contact with the secondary sear connecting pin. Therefore the hammer was not tripped and was still held by the secondary sear hook on full cocked position after the bolt and slide had fully closed.

To fire the next shot, it is necessary to release finger pressure on the trigger so that the secondary sear will release its engagement with the hammer. After the secondary sear releases the hammer, the trigger hook (primary sear) will automatically catch the hammer. The trigger hook will then hold the hammer on full cocked position. Pressing the trigger will fire the next shot, repeating the semiauto operation as previously described until the magazine is empty. The bolt will be held open after the last round is fired.

Connector Full Automatic Functioning

The basic operation of the converted weapon during full automatic firing is similar to the one described in semiauto functioning with the exception of the following action sequence.

For full auto firing, move the selector lever forward to the full auto index. *Caution: never move the selector lever to full auto position while pressing the trigger with a live round in the chamber. This will automatically cause the weapon to fire full automatic since the selector lever arm (E) will force the sear trip to push the connecting pin of the secondary sear rearward, releasing the hammer and firing the weapon.* This action applies only if the hammer is being held by the secondary sear hook, not by the trigger hook. Either way, it is best not to change the selector lever setting while the trigger is being pressed to prevent accidental discharge. Always make it a practice to change selector settings with the safety on and the trigger not being pulled. This applies to any selective-fire weapon utilizing a conventional closed-bolt system with a bolt-operated tripping lever. Some of the weapons using this system are the M2 carbine, M14 rifle, Beretta BM59, AK 47 and AKM Russian-made assault rifles, H&K G3 rifles, and M16 rifles. Their bolt-tripping systems differ from one another, but all function on the same principle.

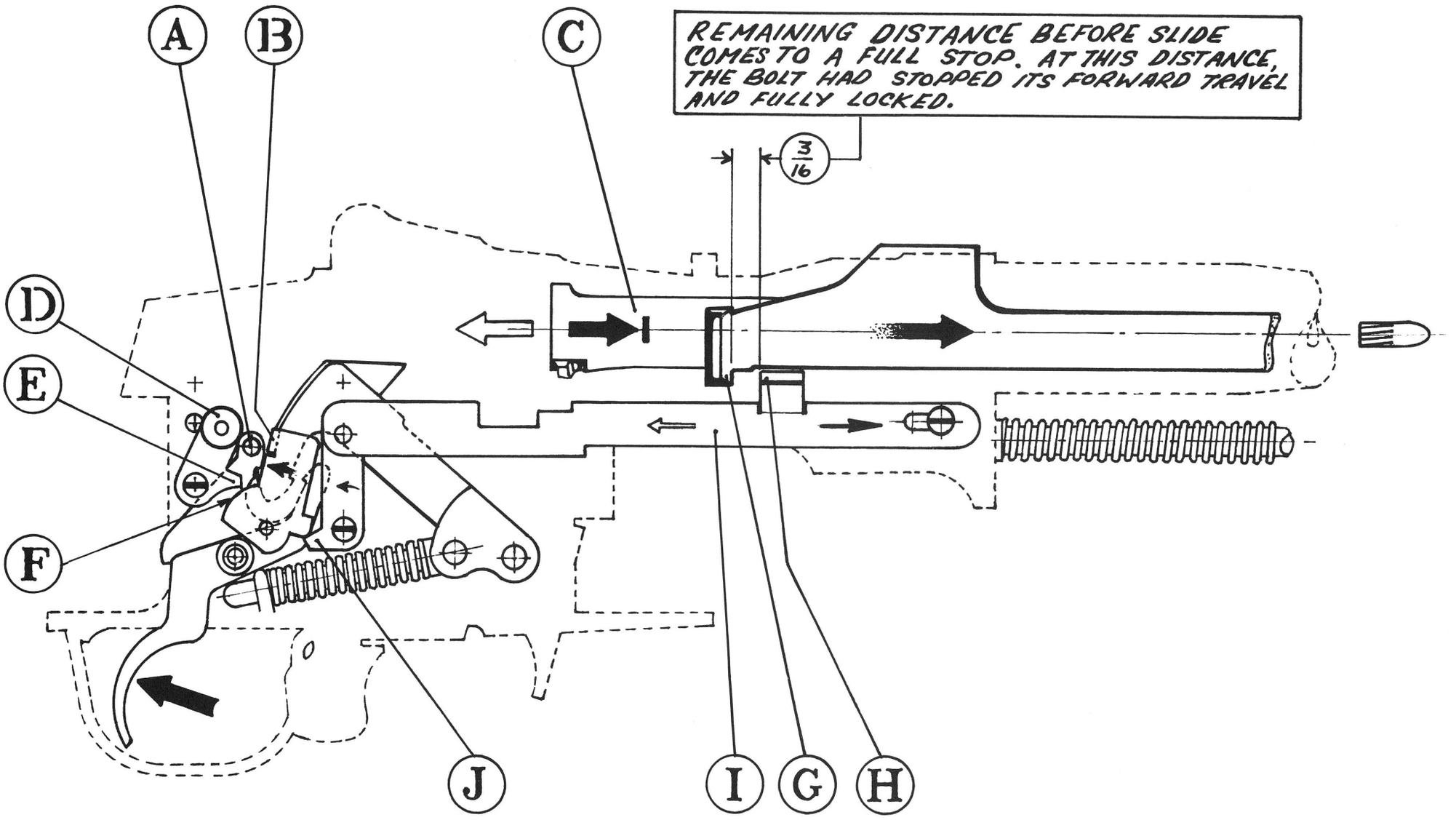
As noted earlier, the basic principle for full auto functioning is similar to the semiauto cycle. Let's assume that the weapon's chamber is now loaded, hammer cocked, slide and bolt on full forward rest position, with loaded magazine inserted ready to fire the first shot. The selector is now moved forward for full automatic firing.

Press the trigger, and the weapon will fire the first shot. Pressure of the gas will be bled off through the gas tappet and operate the slide to move rearward. The slide will recoil rearward with the bolt extracting, ejecting, and recocking the hammer on full rearward recoil. After ejecting the empty shell, the bolt and slide will move forward under recoil spring tension to accomplish loading the next round from the magazine and locking the bolt.

Note that after the first shot is fired and the slide moves rearward to force the bolt to unlock from its seating recess, the connector bar will again be activated to do its rearward function as described in the semiauto functioning section. Starting from the secondary sear pin (A), it presses against the trip lever bent hook (B), causing the trip to pivot forward with its toe forcing the rocker toe downward. The transfer of action through these three parts moves the connector bar rearward.

This is the relationship of the mechanism up to the point where the bolt has already locked, but the slide still has travel of about one-half inch forward before fully closing. While maintaining the trigger pull in this position, as noted earlier,

FULL AUTO. FUNCTIONING



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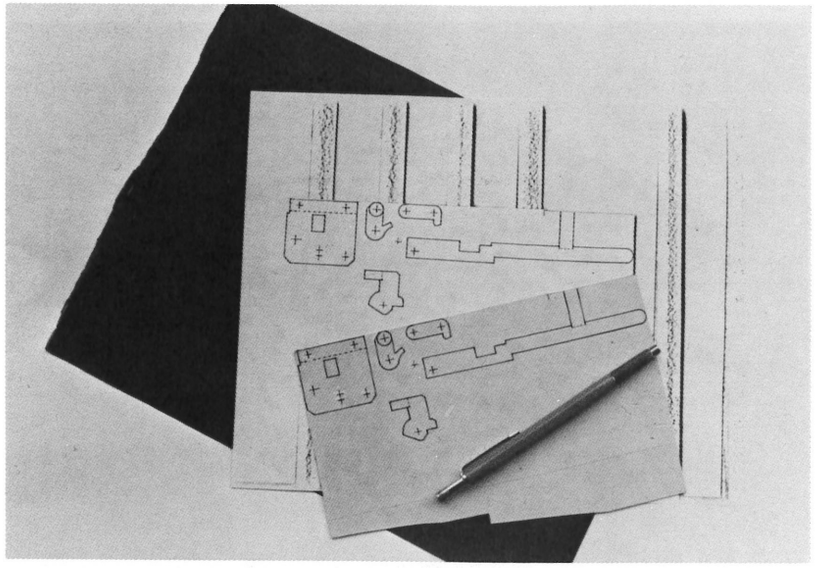
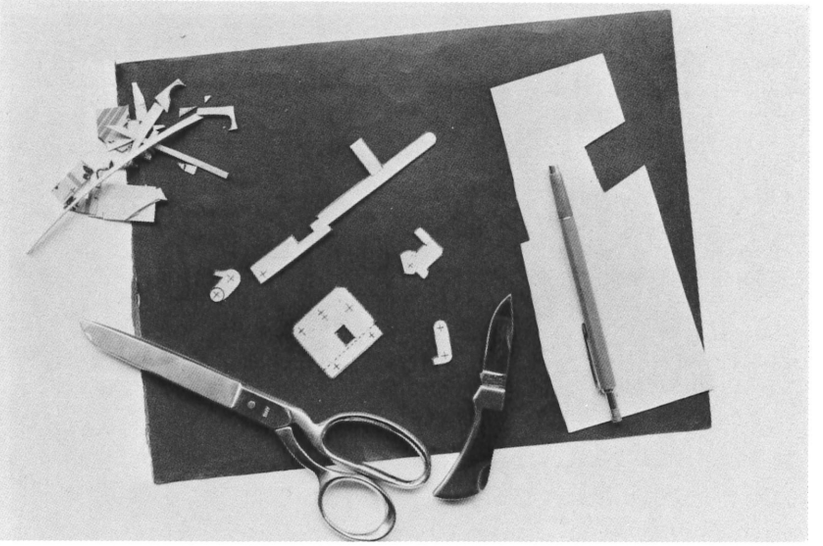
the secondary sear always makes the first contact with the hammer during recoil, holding the hammer at full cocked position until pressure on the trigger is released. Note that on the full auto setting, the selector lever arm (E) is now controlling the upward movement of the sear trip lever. The trip lever can now only move to pivot rearward or forward but not upward or downward as on the semiauto setting.

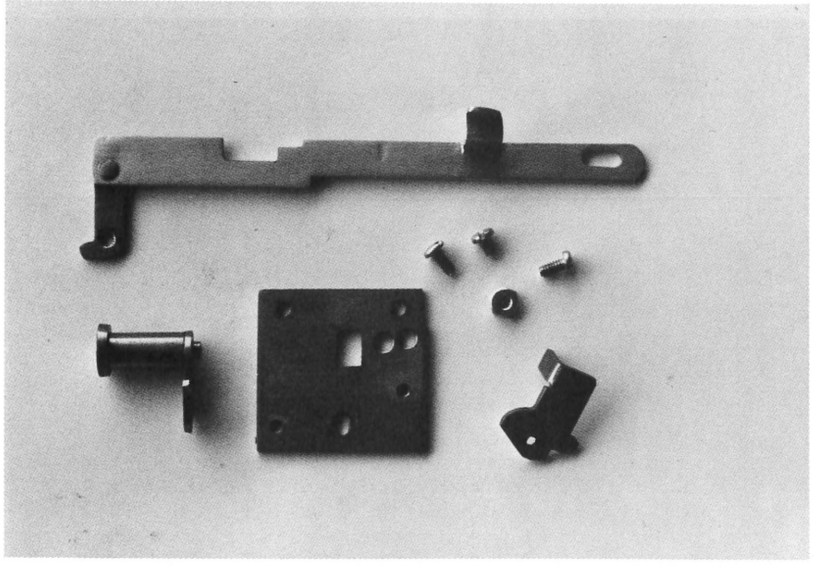
During the last 1/4 inch forward action of the slide before it fully closes, its cocking handle underside (G) will make the initial contact with the connector bar hook (H) forcing the bar forward until the slide comes to full stop. The connector bar will then pull the rocker lever, causing the rocker lever toe (J) to force the trip lever toe to pivot rearward since the selector lever arm (E) prevents it from any other action. The trip lever bent hook (B) is now parallel to the secondary sear connecting pin (A) and will make contact. The secondary sear connecting pin (A) will be pushed rearward by the bent hook of the trip lever (B) releasing the hammer (as held by the secondary sear), firing the weapon. This time both the bolt *and* slide are fully locked and stopped. This sequence of operation is repeated automatically as long as the trigger is held or until the magazine is emptied. The slide will remain open after the last round is fired.



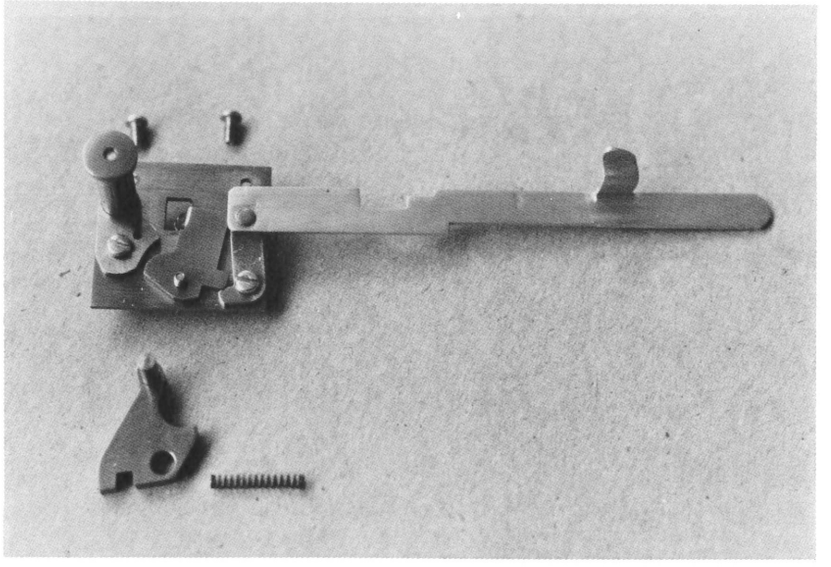
Full-scale template drawings required for the selective-fire conversion process are traced using carbon paper, pencil, and a thin piece of cardboard.



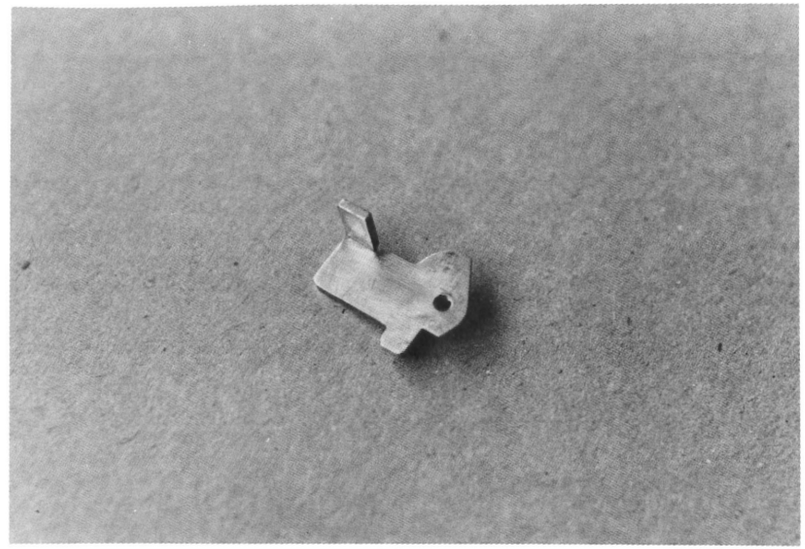
Full-scale drawings on cardboard are cut with scissors to actual size and hard-to-cut corners are cut with a sharp knife. After cutting cardboard parts to exact template dimensions, trace them on the sheet metal steel using a fine permanent marker to copy their shapes as closely as possible. The steel may also be painted with metal ink and the template traced with a metal scribe.



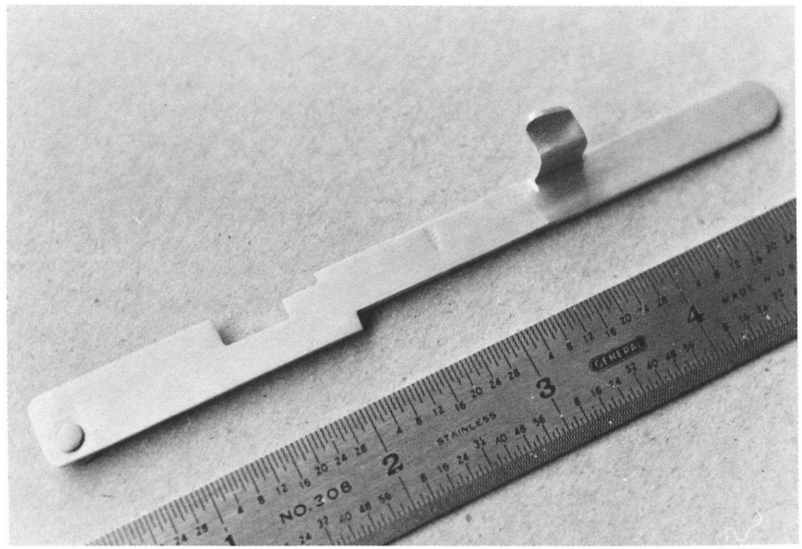
View of the automatic connector and replacement sear with the optional lighter spring.



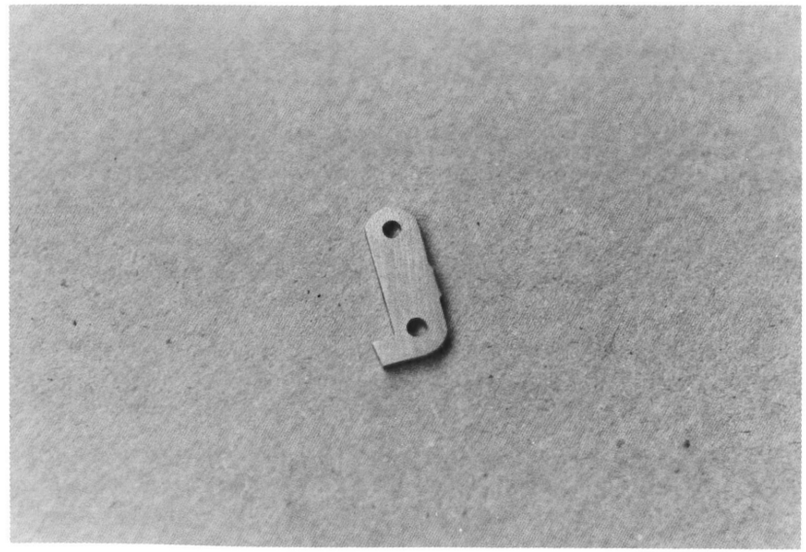
View showing the automatic connector partially disassembled. The selector lever mechanism is intact since Loctite was applied to the pull knob to prevent the threaded end of index plunger from loosening.



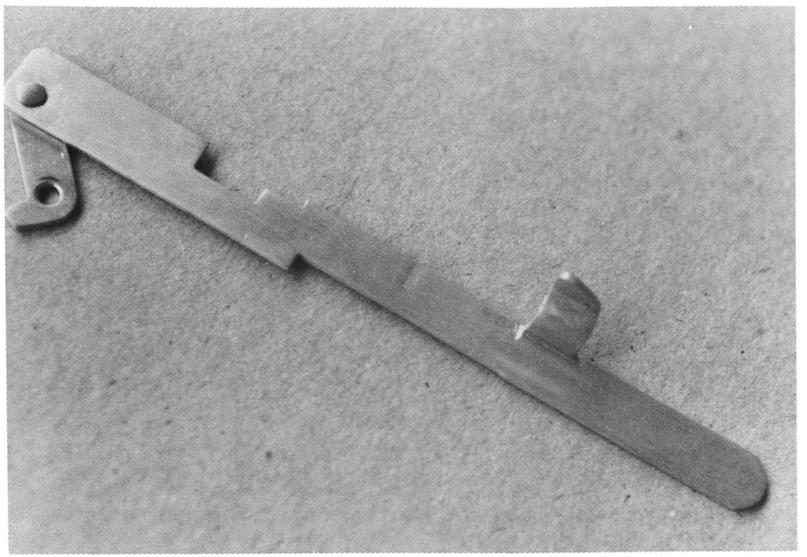
Detailed configuration of the sear trip lever after forming. Note the bent hook that trips the replacement sear's connecting pin. The bent part is inserted into the square slot of the mount plate during assembly.



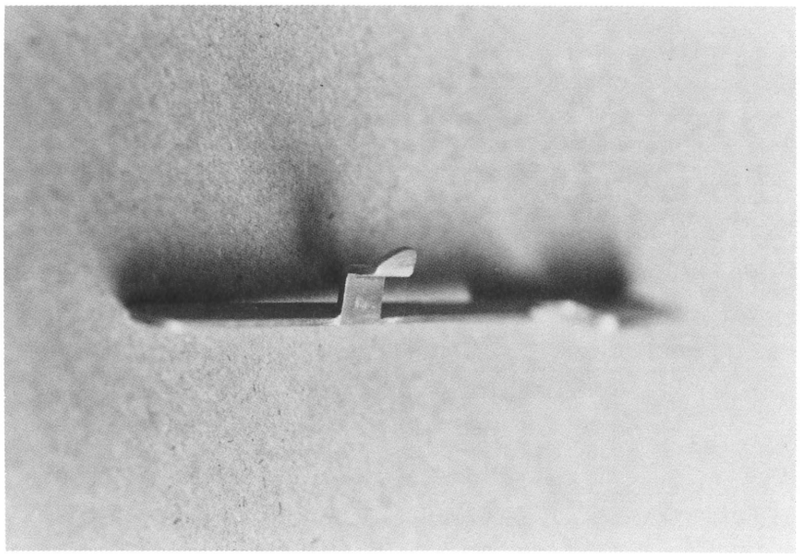
View of the connector bar after forming and fitting. The flared ends of the rivet fastening the connector bar and rocker lever must be countersunk into the surface.



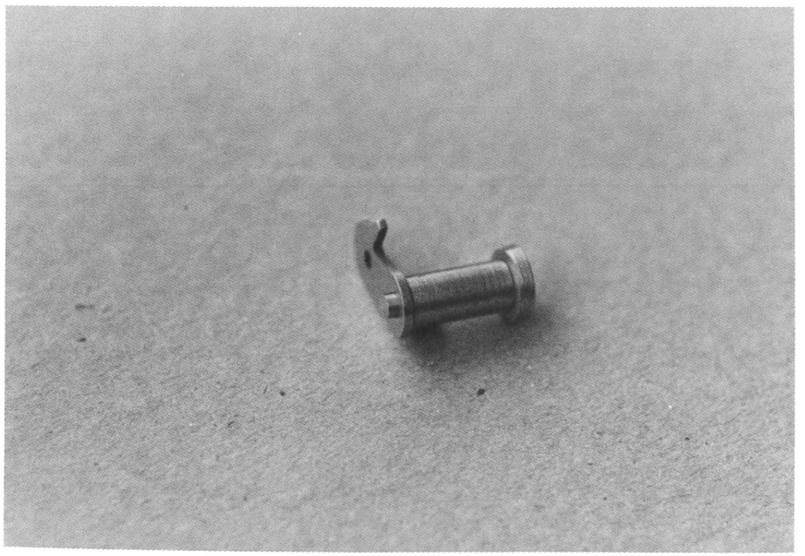
Detailed view of the rocker lever. The upper hole must be countersunk on the left side flush with the rivet head.



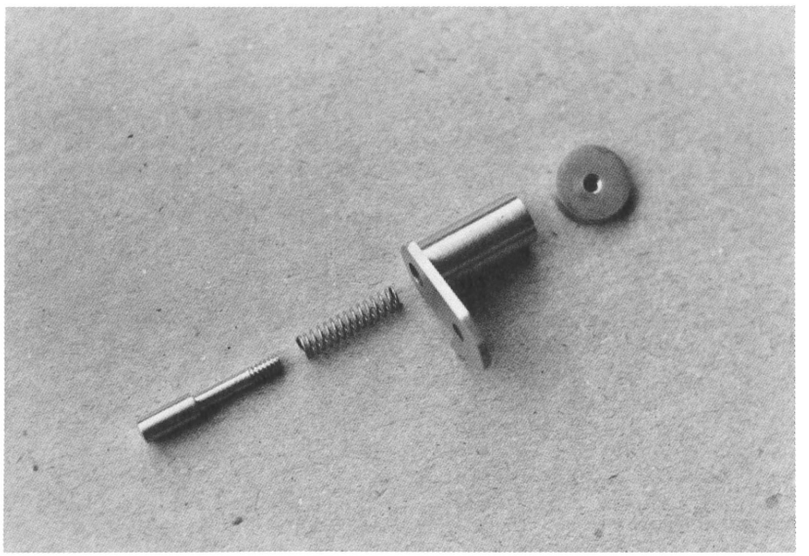
Right side view of the connector bar and rocker lever riveted together. Make sure that there is enough play in both parts after riveting to insure proper functioning.



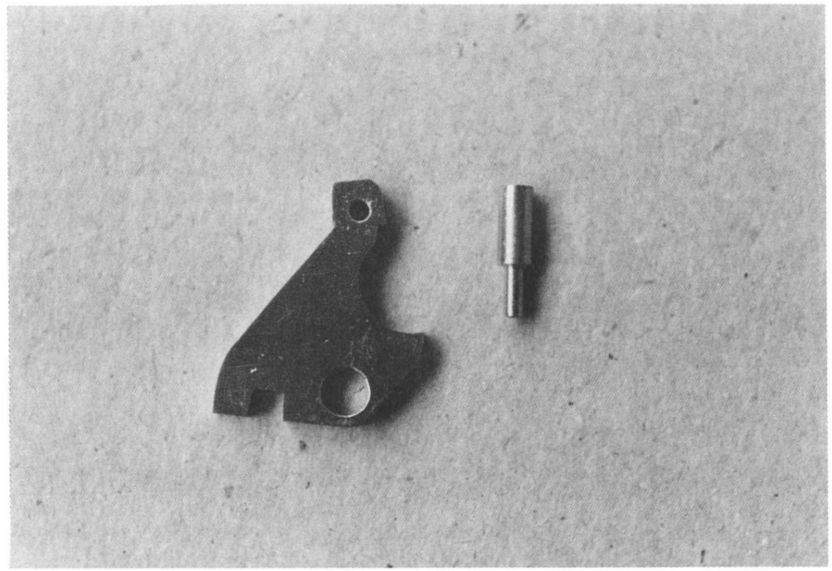
Front top view of the connector bar hook that engages with the lower part of the cocking handle of the slide during forward recoil.



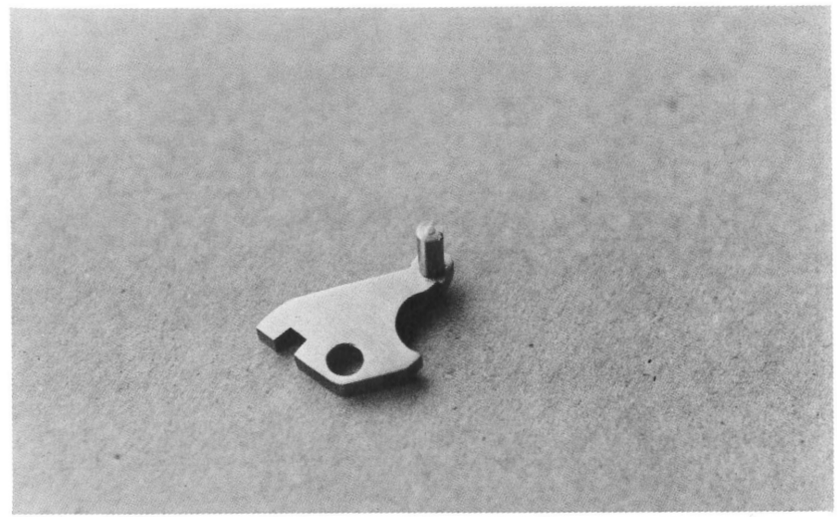
Detailed view of the fully assembled selector lever mechanism.



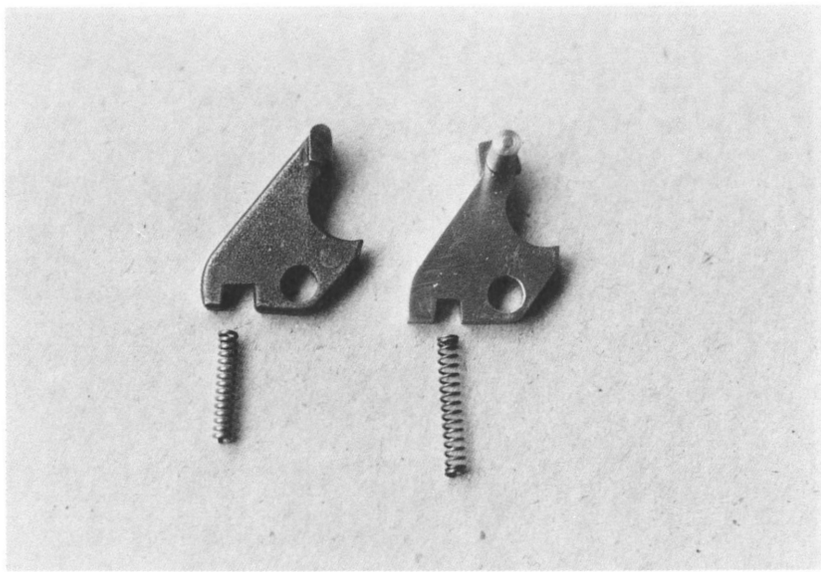
View of the fully disassembled selector lever mechanism. Apply Loctite or similar metal glue to threaded areas of the pull knob and index plunger threaded end before final assembly to prevent loosening.



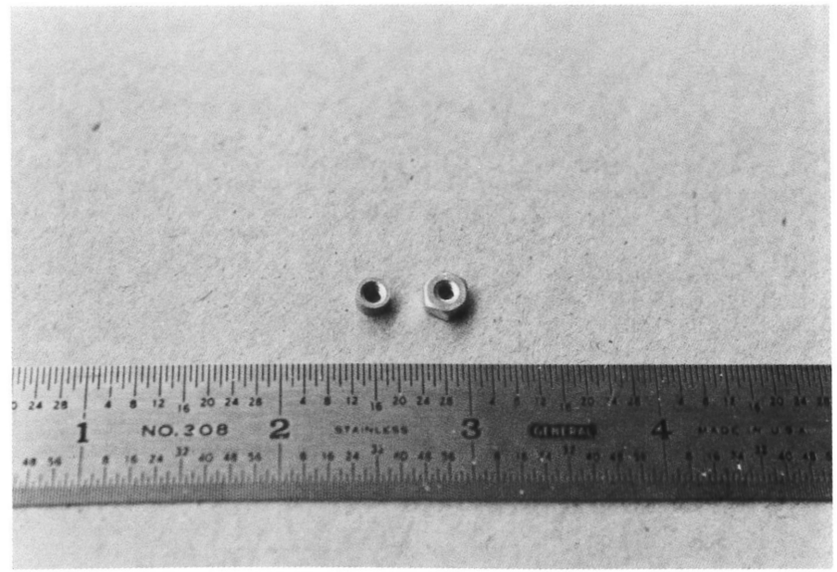
View of the handmade replacement secondary sear and its connecting pin prior to assembly of pin to sear. The connecting pin is riveted or permanently silver soldered to the upper hole of the sear.



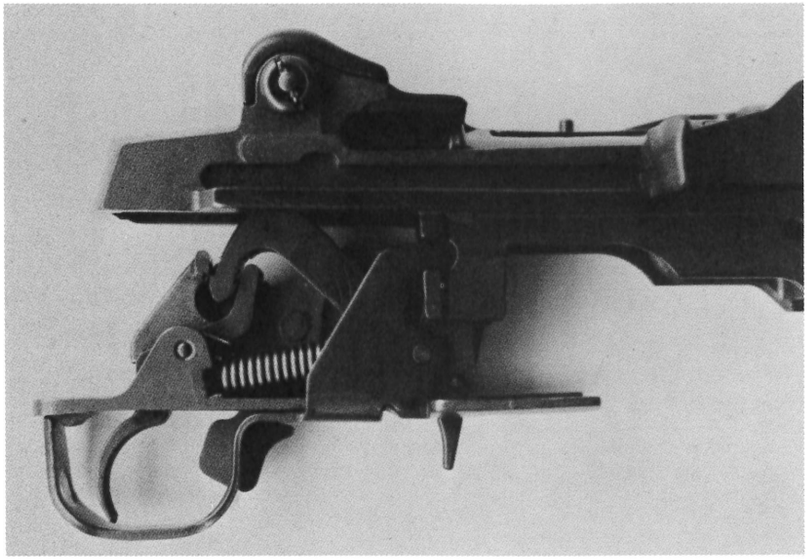
Detailed view of the replacement secondary sear with its connecting pin riveted in place. The function of the protruding connecting pin is to make contact with the sear trip lever to release the hammer when the selector is set on full auto functioning. The tripping action of these two parts will only take place during forward recoil of the slide when it forces the connector bar hook to move forward. The forward-moving connector bar hook activates the connector group assembly to trip the secondary sear and release the hammer while the trigger is being pressed.



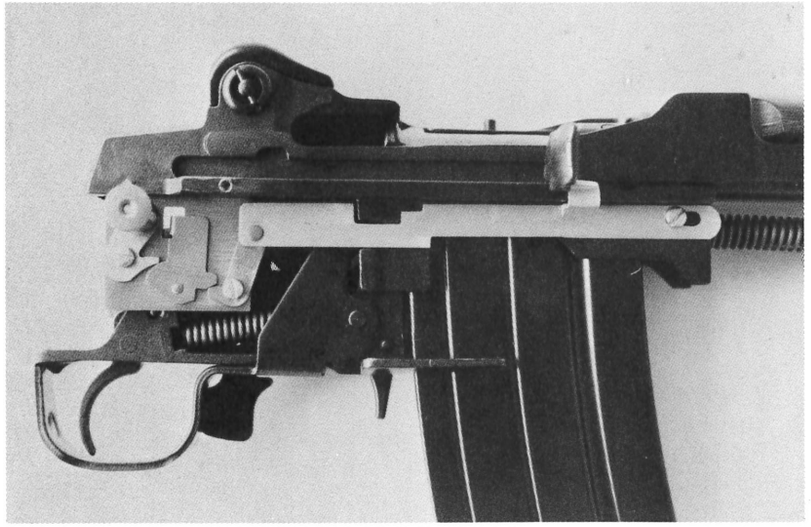
Detail showing the original factory sear (left) and spring compared to the replacement sear with an optional light-weight longer spring. The original sear spring is usable and is as good as the replacement.



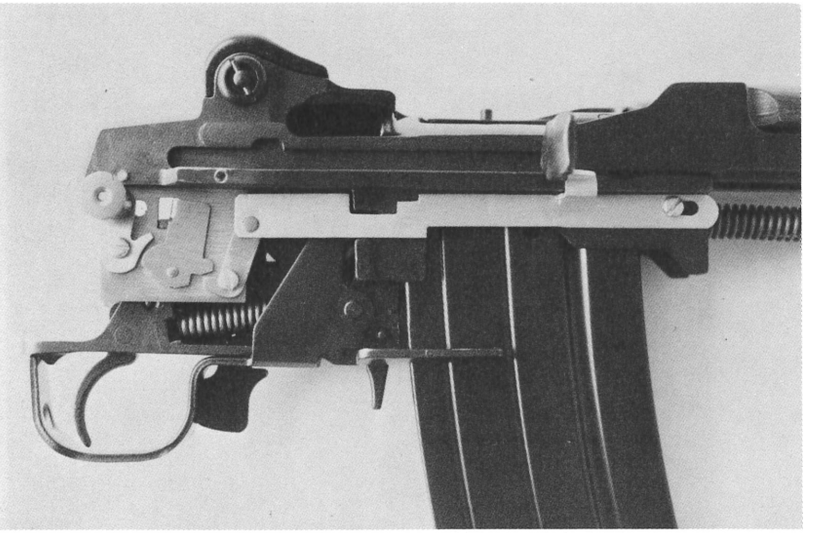
Detail showing a standard 4-40 hex nut (right) compared to a trimmed 4-40 hex nut rounded to a dimension which can be press-fit into the magazine catch assembly pin hole to mate with the connector bar front retaining screw. Without the connector group assembled to the gun, it can be simply pushed out by tapping it with a rod towards the catch pin.



View showing the fully assembled mechanical components (without stock) of the original semiauto Mini-14 prior to selective-fire conversion.



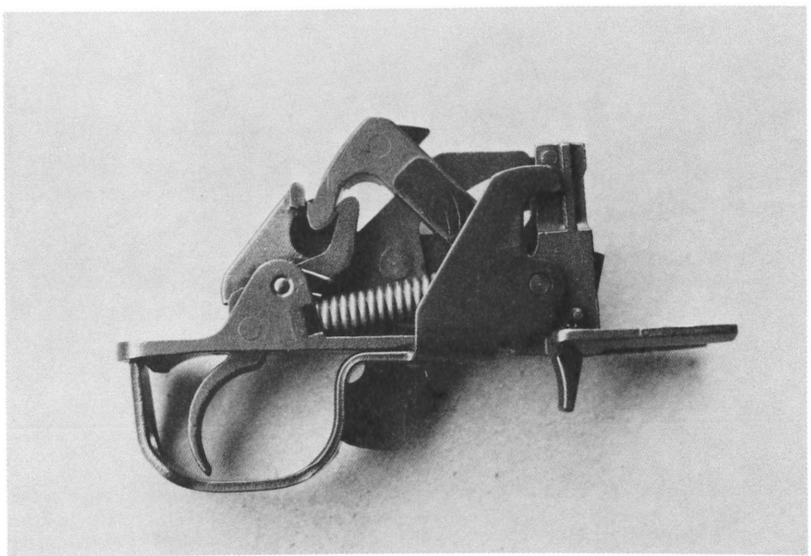
In this view, the selector lever is set forward to full auto position. Both the slide and connector bar are in forward rest position. Note that in this position, the selector lever arm is controlling the *upward* movement of the sear trip lever. The sear trip lever's bent hook extending inside the square slot of the mount plate is pressing against the replacement sear connecting pin, which is slightly visible at the lower left corner of the square slot. This action will result in full auto firing every time the connector bar is activated by the bolt cocking lever during forward closing.



Detailed view of the automatic connector fully assembled to the gun. The selector is set on semiauto. Note that the connector bar is in forward position, pushed there by the cocking handle of the slide. Both parts are on forward rest position. Note that the secondary sear trip bent hook protruding into the square slot is not touching the sear connecting pin. The trip has moved up as activated by the connector bar but does not pivot to the rear since the selector lever arm is not making contact with it.

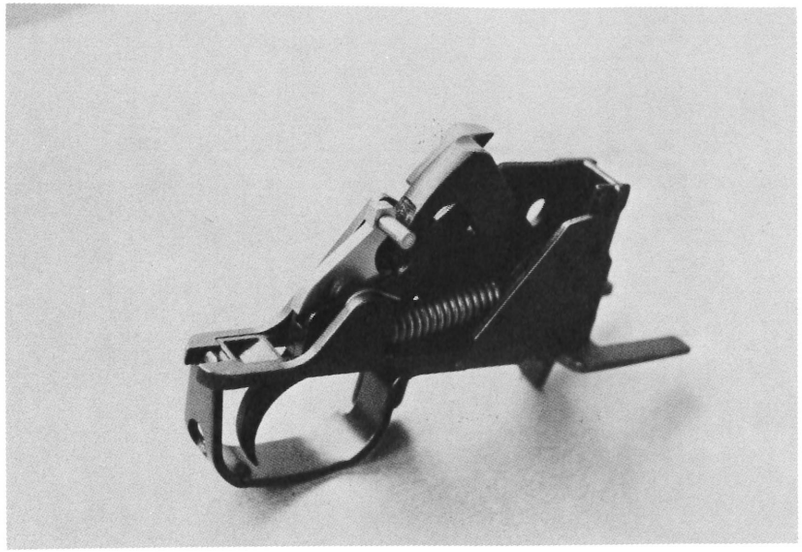
View showing the converted selective-fire Mini-14 receiver group with a 20-shot factory clip.

View showing the disassembled receiver subgroups without the stock.



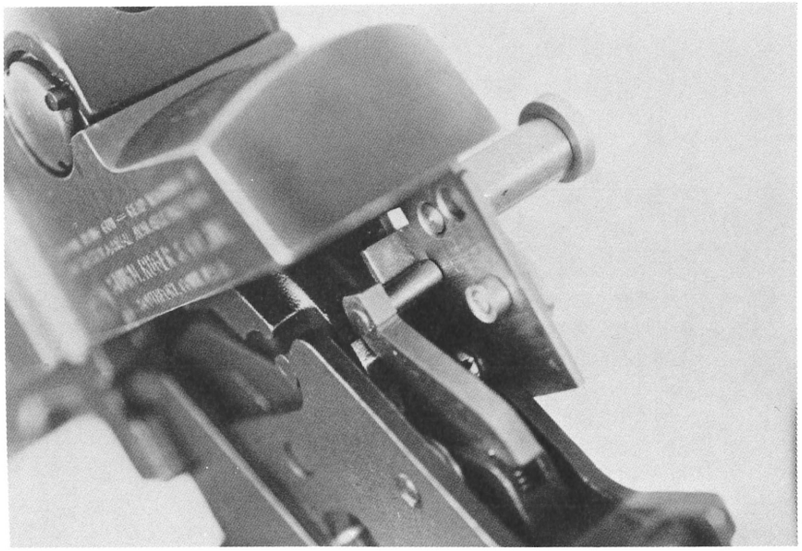
View showing the original semiauto trigger mechanism and sear assembly.

View of the converted trigger assembly with new replacement sear with connecting pin. Note that the original safety function is the same. The replacement sear can be used with the original factory trigger mechanism without the automatic connector unit mounted on the receiver. This will not affect its original semiauto operation.

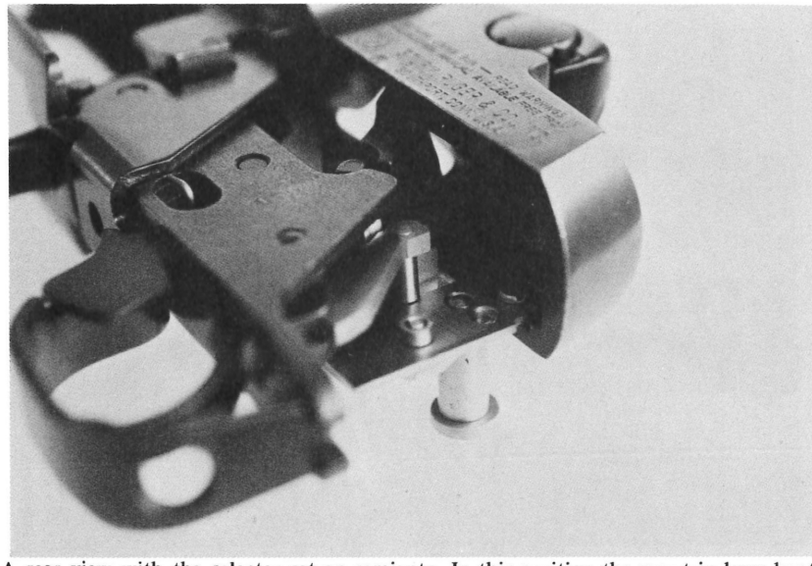


Rear side view showing the converted trigger mechanism assembly with replacement sear.

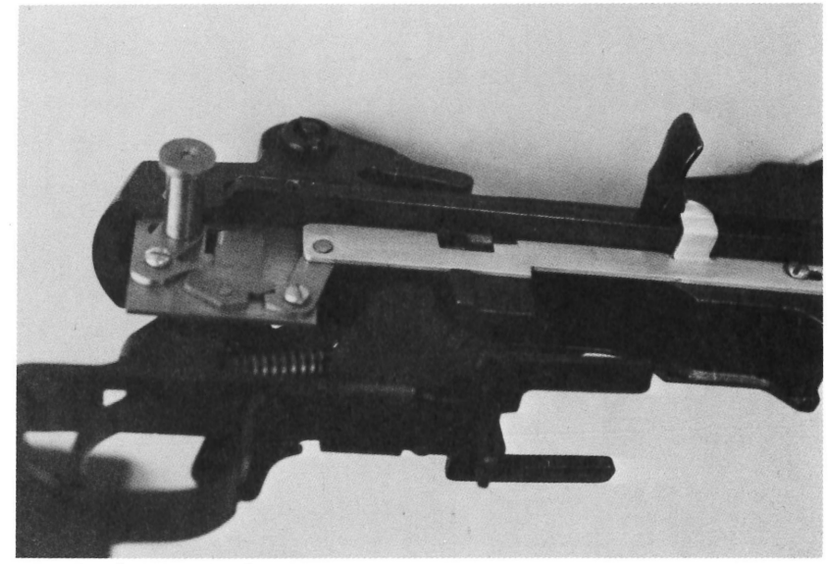
Detail showing field-stripped view of an off-the-shelf Mini-14 newly converted to selective fire capability.



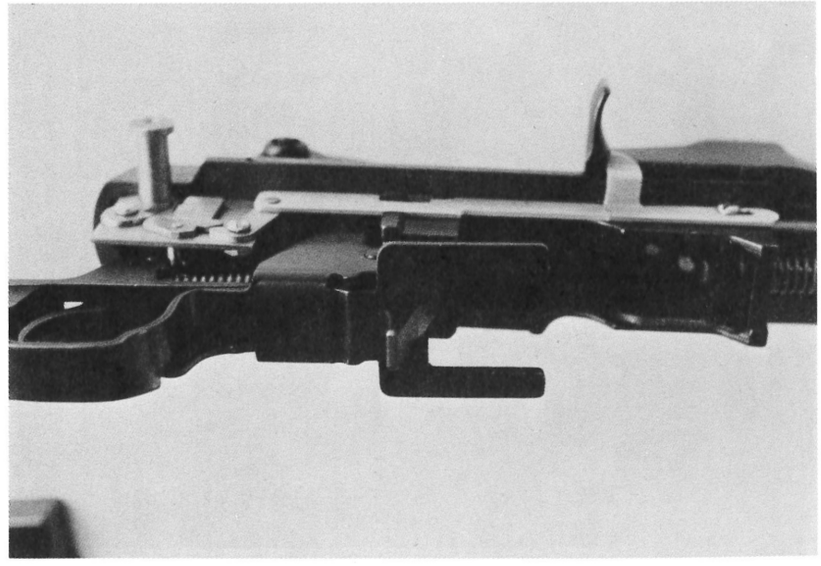
An inside look from the rear end of the receiver with the automatic connector and replacement sear in place. The selector in this view is set to full auto. The sear trip lever bent hook protruding from the square slot of the mount plate is pressing against the replacement sear's connecting pin.



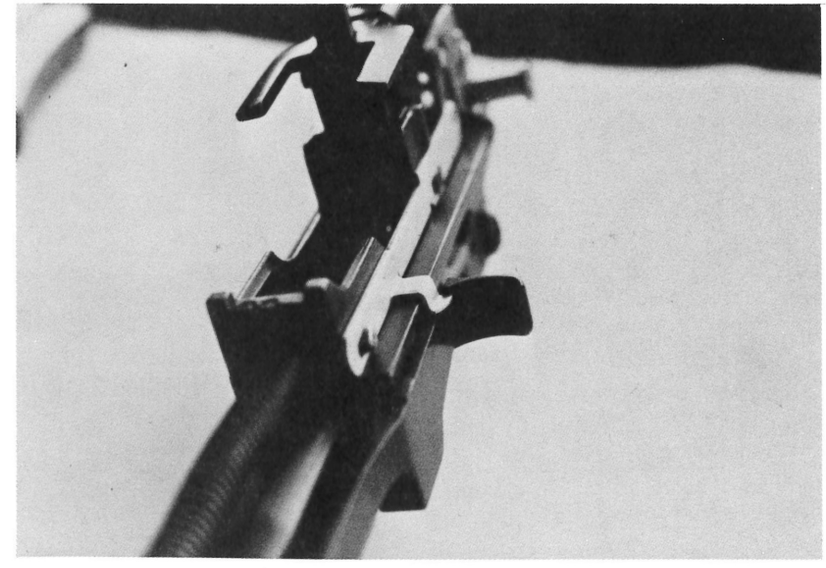
A rear view with the selector set on semiauto. In this position the sear trip lever bent hook moves only upward and bypasses the sear connecting pin, preventing the hammer from releasing while the trigger is being pressed. During this cycle the replacement sear always catches the hammer first, then passes by the trigger hook when pressure on the trigger is released. Another pull of the trigger is therefore needed to fire the next shot.



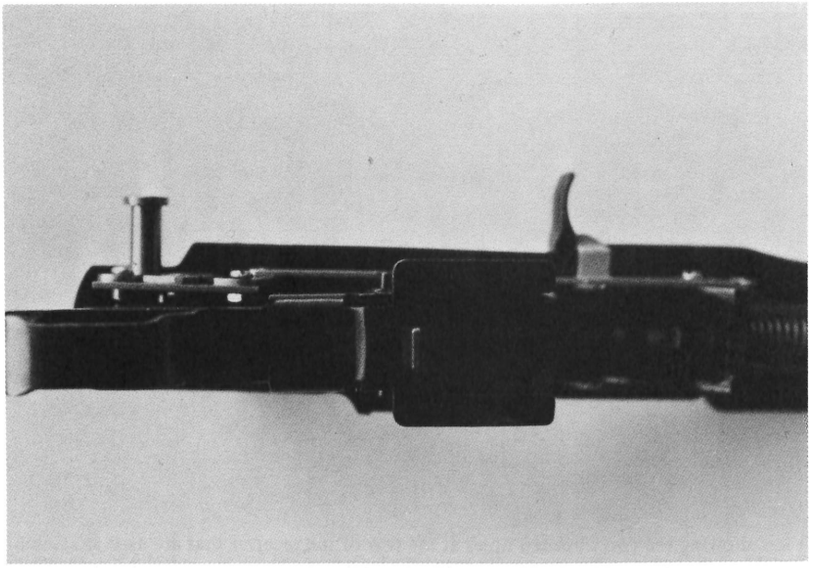
View showing the underside of the assembled automatic connector group and receiver.



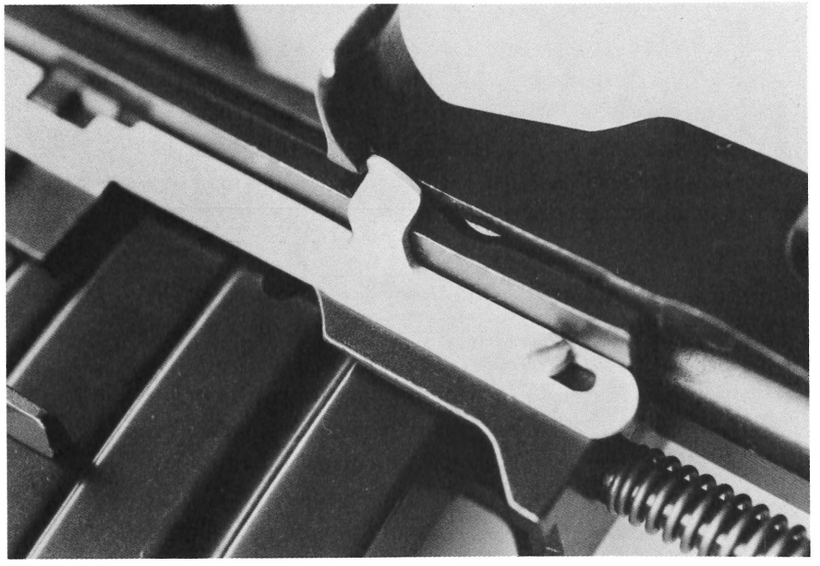
Another underside view showing relationship of the connector to the receiver. Note that the connector bar must fit flush against the lug rail of the receiver. Some filing on the underside of the connector bar may be needed to achieve a close fit here.



Front side view showing the bent-formed hook of the connector bar making contact with the lower part of the slide's cocking handle. Bending tool steel material as shown is difficult, as this type of steel breaks off easily unless heated to bright red before the bending operation. An alternative is to use mild steel which is then case hardened after bending and final fitting is accomplished.

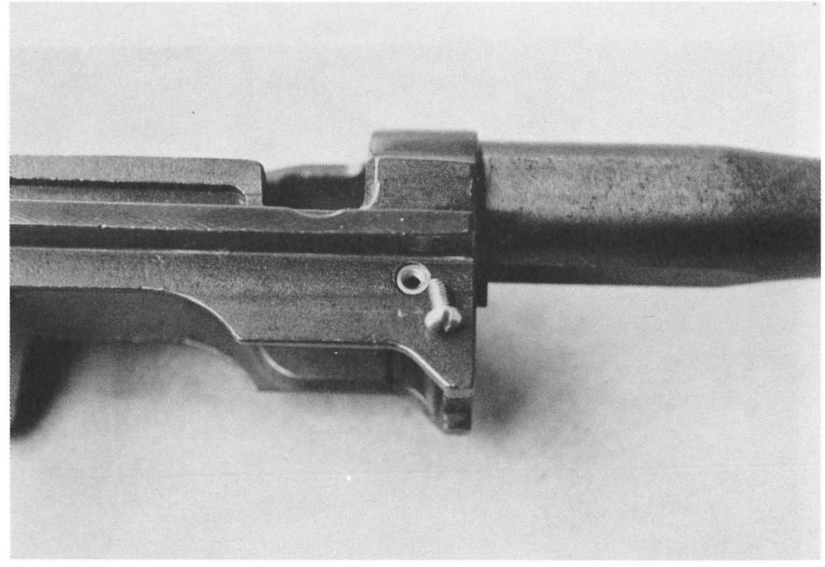


View from the bottom showing the engagement of the slide and connector bar hook.

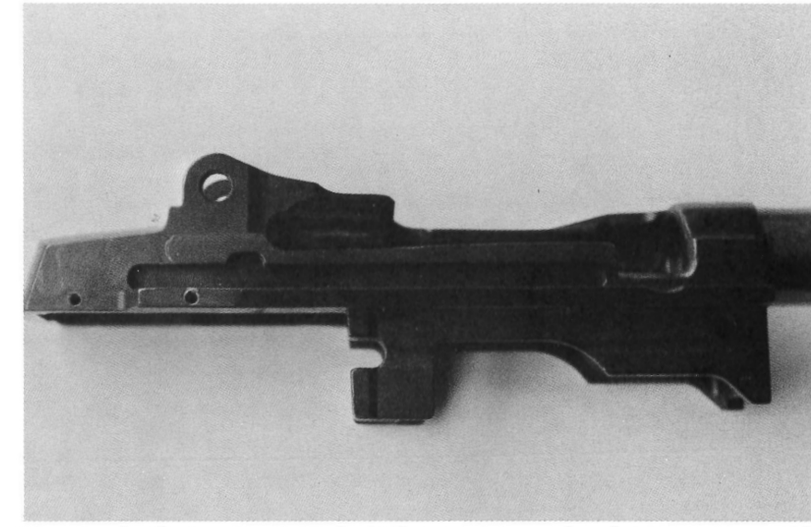


Detailed view showing the fully assembled connector bar and front end retaining screw. Screw nut is press-fitted prior to assembly. Note the well-fitting, precisely formed connector bar hook in full forward engagement with the surface of the slide's cocking handle.

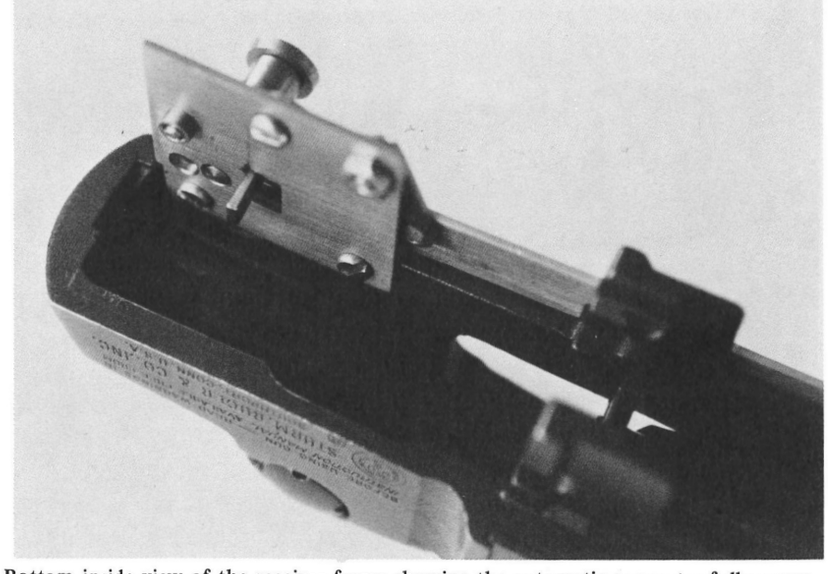
View of the connector bar front retaining screw and nut prior to press-fitting the nut. The nut is sized by assembling a few nuts to an inch-long 4-40 screw, chucking the screw with nuts into a portable drill press, and trimming the nuts with a mill file until the desired outside diameter is reached.



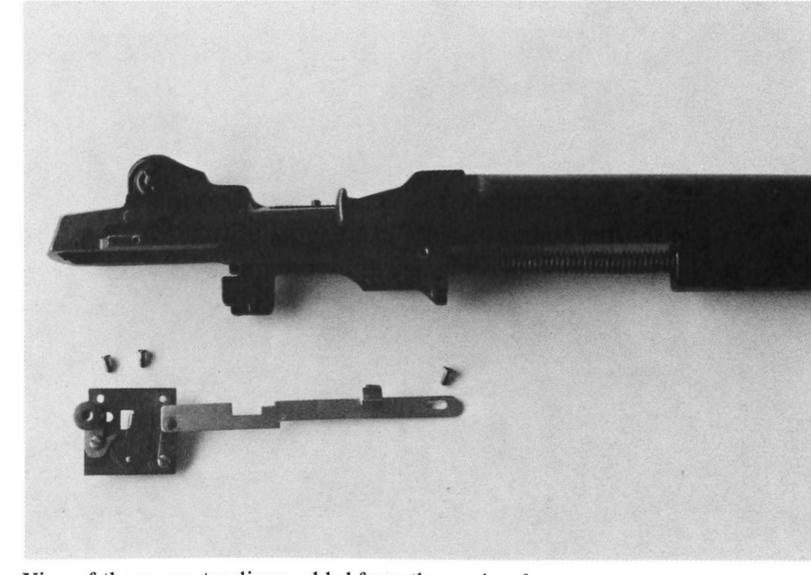
View of the connector bar front retaining screw and nut press-fitted into the magazine catch pin assembly hole.



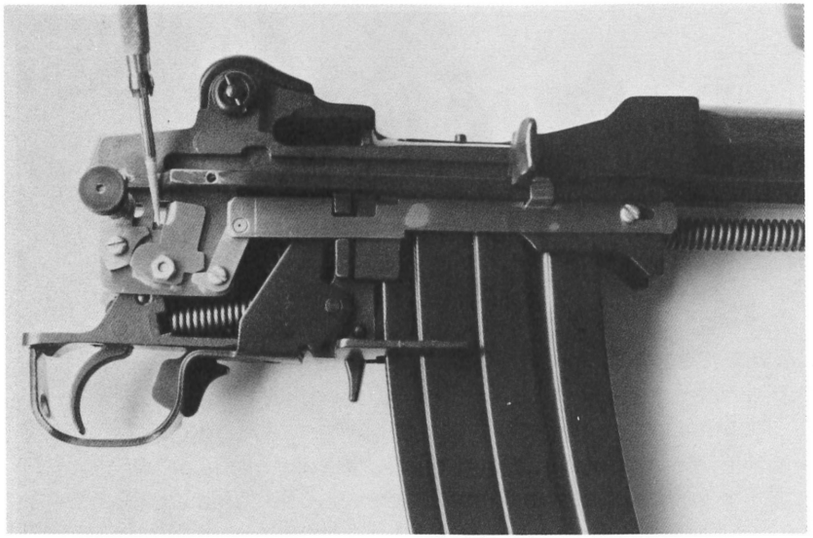
View showing the two threaded holes at the rear of the receiver that are used as assembly holes for the automatic connector. The assembly screws are mounted from the inside with the connector assembly mount plate. Make sure that after assembly, the inserted portion of the mount plate and screw head protrusion do not interfere with the operation of the bolt during recoil. File off any part of the mount or screw head that makes contact with the bolt during battery or recoil.



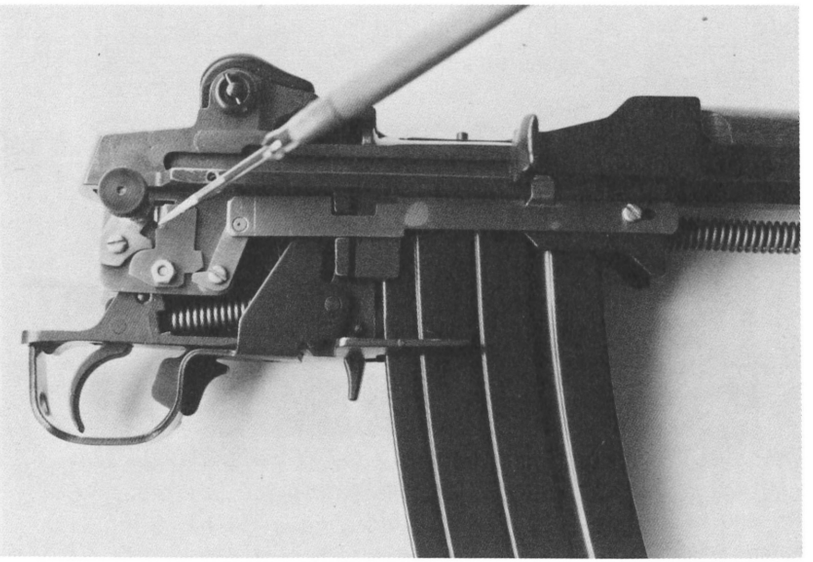
Bottom inside view of the receiver frame showing the automatic connector fully assembled to the Mini-14 receiver. The assembly holes for the connector mount plate must be counterbored to sit flush with the screw head. If drilling the receiver to mount the plate is not practical, simply silver-solder it into position. Use two small "C" clamps to hold the part in place while soldering. For quick removal, simply melt solder away and the part will come off easily. This arrangement requires no alteration to the gun.



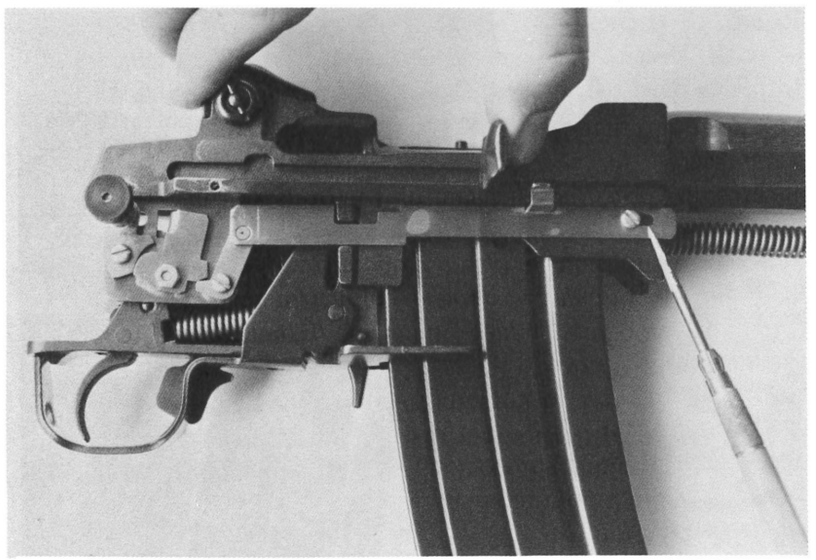
View of the connector disassembled from the receiver frame.



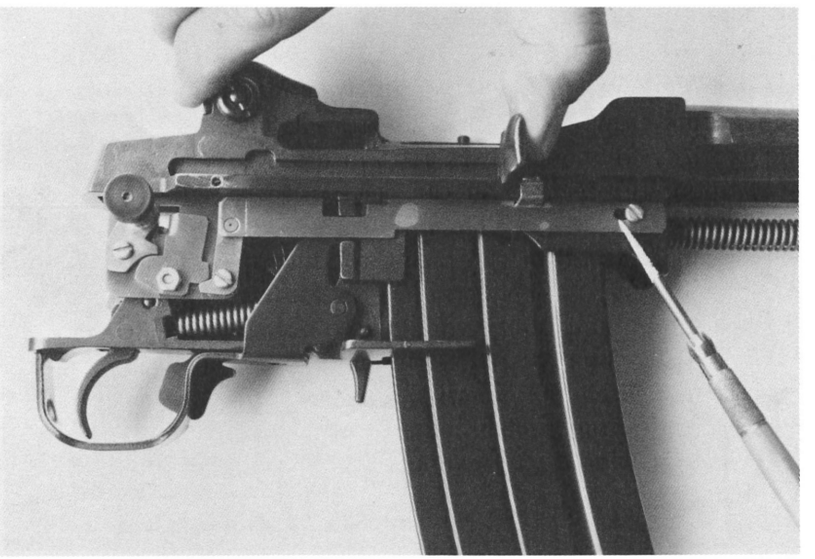
This series of photos shows the right side view of the improved automatic connector. The selector lever pull knob is checkered and the lower corners of the mount plate are rounded for a finished look. Here the inscriber points to the secondary sear connecting pin viewed in the square slot. Since it does not engage with the sear trip lever protruding from the square slot, the gun fires semiauto, not full auto.



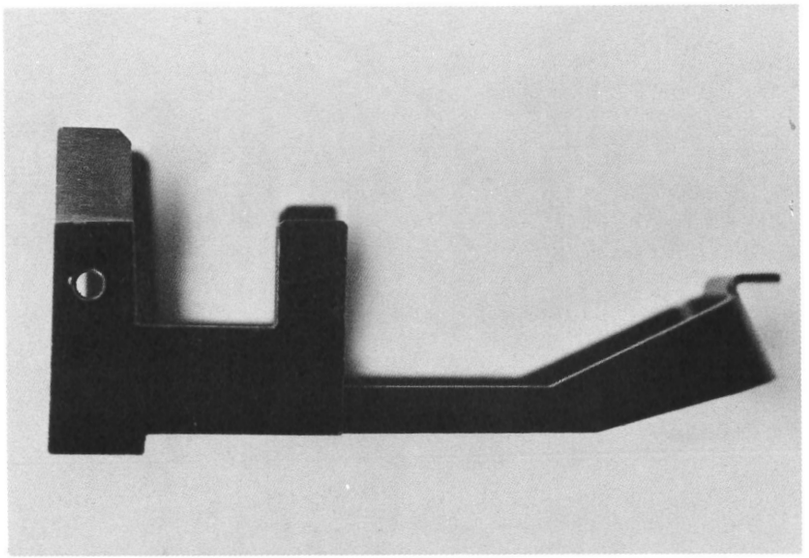
Here the scribe points to the secondary sear connecting pin as it is forced rearward by the sear trip lever. The selector lever front arm prevents upward motion of the trip lever which results in full auto functioning.



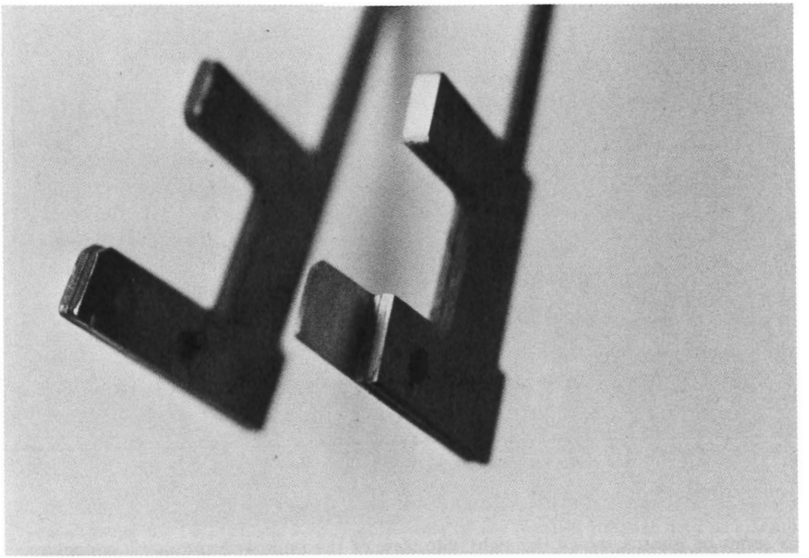
View of the slide partially retracted during semiauto firing. In this position, the connector bar will move to the rear only while the trigger is pressed. Without pressure on the trigger, there is no action on the connector bar.



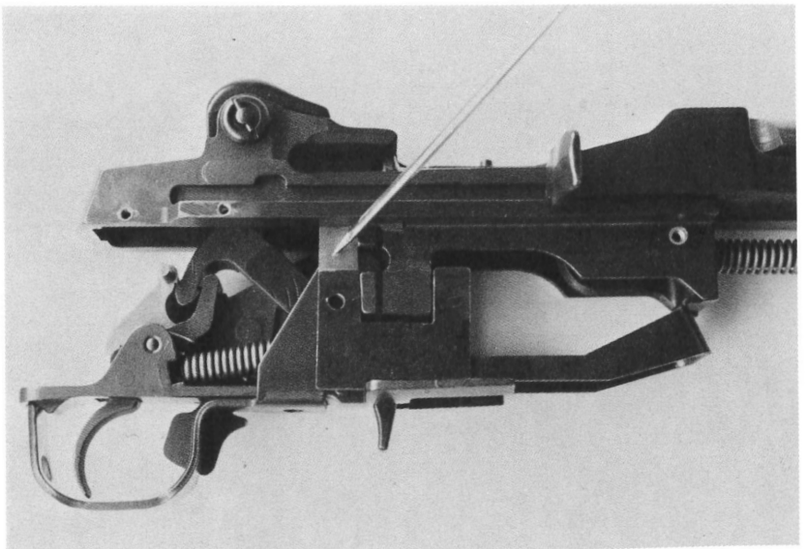
View of the partially retracted slide when set on full auto. The connector bar is forced rearward immediately after the slide retracts. The secondary sear pushes the sear trip lever that protrudes from the square slot, after which the rocker lever pulls the connector bar to the rear. The scribe points to the slot where the connector bar is controlled.



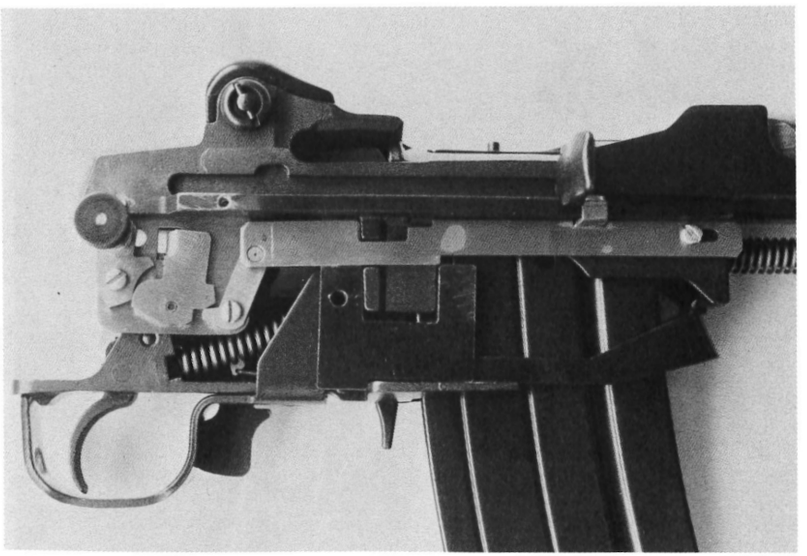
Right side view of the stock reinforcement frame after modification. See drawing to determine amount of metal to be removed.



Close-up view of the stock reinforcement frame after it has been modified to properly fit the connector bar.



Scribe points to the filed rear prong of the reinforcement frame. Also remove a small amount of metal from the top portion of the front prong with a hacksaw, then finish removal with a file. See specifications for amount.



Here the fully modified stock reinforcement frame has been assembled and set in semiauto position. Note that the connector bar seats flush with the modified stock reinforcement frame. Press lock the trigger bar normally to lock parts in the assembled manner. *Caution: Always set the selector semiauto before assembling the trigger group to the receiver frame so that the secondary sear connecting pin will align with the sear trip lever. Failure to do so will result in improper engagement and possible malfunction.*

3. Fabrication Procedures

Before building all the conversion parts for the Mini-14 in steel, you must accomplish the following.

Obtain carbon paper, thin hard cardboard, a pencil, small sharp scissors, and a small knife. A razor blade will do if a small knife is not available.

Trace the original templates in this book onto the cardboard using the carbon paper. Make sure that the angles and contours are copied as accurately as possible. Do not forget to mark the center lines through which the part is to be drilled.

After tracing all full-scale components on the piece of cardboard, cut out the parts using the scissors. Be as accurate as possible. The hard-to-cut corners can be finished off with the small knife or blade. After cutting the cardboard templates, compare them to the full-scale drawings in the book to make sure you have cut them out to exact size.

After you are satisfied that all cardboard templates are cut out correctly, the templates can be traced on the actual steel material. If you are going to use white unblued steel, trace the cardboard part on the steel using a fine tip permanent marker. Stay as close as you can to the actual size of the component. Note that if the inked lines of the traced part are filed off, it will match the dimensions of the cardboard template. Further adjustment and filing will still be needed during the final fitting and assembly.

If you will be using blued metal for your small parts, use a machinist's scribe to trace the cardboard templates on the metal surface. Make the lines as visible as you can.

Now your metal components are ready to be cut. Note that all components for the conversion parts are easily built by hand requiring only common handtools. Parts are individually cut by a hacksaw first, staying as close as possible to any contours and internal radii. Square ends are finished off by appropriate files.

After cutting all the metal components to their actual specified dimensions, make sure that all contact surfaces are highly polished after fitting. In the case of the sear trip (part #13) and connector bar (part #9), they still must be bent to form after cutting to the specified dimensions. A simple bending technique for the connector bar hook is illustrated. The technique can be applied both to the sear trip and connector bar. The sear trip requires only one bending operation. The final dimensions of these two parts (sear trip and connector bar) can be determined and adjusted only after the required bend is formed. Make sure that all components of the weapon (trigger group, bolt group assembled to the receiver, and the connector group mounted to the receiver) are fully assembled without the stock before making any fitting adjustments on connector group components. This will also apply to the new replacement secondary sear. For adjustment procedures, see chapter 7.

Make sure that all components are heat-treated accord-

ingly after the part is fitted and adjusted to workable order. Contact surfaces must be polished with fine emery cloth before bluing.

To accomplish converting the Mini-14 to selective-fire, the stock reinforcement liner must be modified so that the connector unit will seat correctly. This entails removing, by cutting or filing, the portion of the reinforcement liner where the connector bar operates.

First assemble the reinforcement liner to the rifle frame, then lock it in place with the trigger housing. To do this, turn the receiver upside down and insert it into its normal position under the receiver. Notice that the liner has square cuts on both arms of its rear section. These square cuts must be inserted into the protrusions on the underside of the receiver where the magazine catch is assembled.

The rear arms of the reinforcement liner are spread wider than the front dimensions. When the reinforcement liner is inserted into its mating part on the underside of the receiver frame, the arms must be pressed in on both sides until they hug the sides of the receiver frame as they would when the reinforcement liner is assembled inside the stock. While the unit is in this position, assemble the trigger group making sure the hammer is cocked and the safety is on. Once the trigger group is assembled in its position on the receiver frame, press-fit in the trigger guard. This will lock the three parts together in an assembly.

Once the three components are assembled, place the connector unit on top of the reinforcement liner while the rifle, without the stock, lies on its left side exposing the position on the right side where the connector unit will be assembled. In this position, the connector bar will not sit flush with the receiver due to the thickness of the reinforcement liner. While the connector bar is in full forward position, mark the portion of the reinforcement liner which must be removed. Make sure that the hole in the connector bar mounting plate is parallel to its assembly hole in the rear part of the receiver when marking the lines so that the calculation will be precise. See drawing specifications for references on the amount of metal that will need to be removed to accommodate the connector bar and connector unit. This operation and adjustment must be perfected before inletting the stock for the assembled connector unit. Once the reinforcement liner is fitted with the connector bar, the amount of wood that needs to be removed can easily be calculated and marked.

4. Connector Group Assembly

After the automatic connector is built and fitted, it is assembled to the mount plate in the following order.

Assemble the selector lever and its indexing mechanism. Insert the index spring into the threaded end of the plunger until it is stopped by the index head. With the index plunger and spring assembled together, insert it (threaded end first) into the selector lever index tube. Push the index plunger until the threaded end of it shows. Assemble the pull-knob disk on the threaded end of the plunger at the specified depth. Make sure that there is at least .100 inch index protrusion to engage with the mount plate for positive selector lever locking. After assembling the pull-knob disk to the plunger threaded end, apply Loctite to the disk hole and threaded end of the plunger to prevent either part from loosening.

After assembling the selector lever mechanism, fasten it to the mount plate using the 4-40 by 1/4 inch screw. During assembly, make sure that the screw is not overtightened as the selector lever is to be moved to its index setting. After the tightness of the screw is adjusted to your liking, assemble the hex nut at the back of the plate and tighten it. When tightening this nut, make sure that the screw is supported by a screwdriver in its head slot so it will not move when the nut is tightened. For maximum tightness, also apply Loctite to the nut and screw end to prevent them from loosening during operation.

Assemble the sear trip lever next. Note that the assembly screw for this part is inserted into the other side of the mount plate through the elongated (oblong) slot. The sear trip lever hole is threaded to mate with this assembly screw. The original length of the assembly screw (4-40 by 1/4 inch) is reduced to .175 inch so that its threaded end will flush with the sear trip surface without unnecessary protrusion when the part is assembled. Make sure that you apply Loctite again to the threaded areas of the mating parts to prevent them from loosening during operation. Make sure that the assembly of this part is not tight. It must be free to move upward and downward as well as pivot to the front and rear without any restriction. Check the oblong slot where the assembly screw is to move up and down. Make sure that the slot has enough clearance for the screw movement.

The last part assembled to the mount plate is the rocker lever. Note that the connector bar is riveted to this part. Hence, they will act as one unit. Using another 4-40 by 1/4 inch screw, assemble the rocker lever to the mount plate. Like the sear trip lever, this part also needs to move freely during operation. After calculating the tightness of the assembly, tighten the mating hex nut on the other end of the screw. Also apply Loctite to the nut and screw end for maximum bonding.

The automatic connector is now fully assembled. Remember that the remaining screw (4-40 by 1/4 inch) part #11 is used to secure the front end of the connector bar to the receiver right side end. This part, together with the connector mount assembly screws, should be kept with the assembled connector all the time for ready installation.

5. Connector-Receiver Assembly

To assemble the automatic connector unit to the receiver, first the weapon must be field stripped. Replace the factory sear with the new secondary sear and connecting pin. This new secondary sear is designed to function primarily with the automatic connector, but can also be left on with or without the connector unit assembled to the receiver.

Screw the connector mount plate complete with assembled connector mechanism to the mounting holes in the rear right side of the receiver frame. Mounting screws and plate are assembled from the inside of the right side frame wall. After the screws are tightened, work the slide by grasping its lower extension (not the slide cocking handle) back and forth to simulate the full auto cycle. See if the bolt is touching the mount plate or screw heads. If the bolt is touching these parts, remove any offending portion by filing. Any protrusion or unnecessary contact of the bolt with the mount plate or screw heads must be cleared for the bolt to perform flawlessly.

Assemble the front retaining screw of the connector bar to the press-fitted nut in the front hole of the right side end of the receiver. This screw should *not* be tightened. The connector bar must be free to move through the elongated slot where the screw fits through without any hesitation. You can apply Loctite to the press-fitted nut to prevent the screw from loosening. This is not of primary importance if the screw head is pressing tightly against the stock wall when the weapon is fully assembled. The screw will not have a chance to loosen itself in this case.

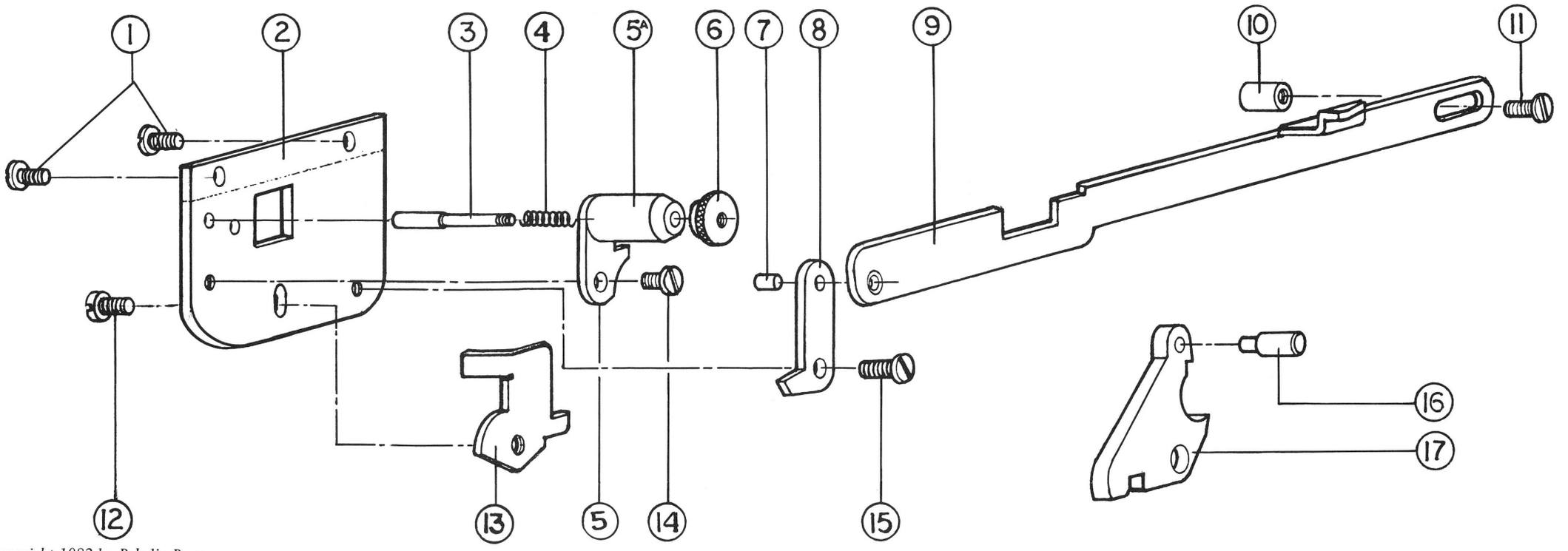
After the automatic connector is fully assembled to the receiver frame, the entire weapon can be assembled as usual. Always check the fitting and functioning of the new parts before reassembling.

To disassemble the connector unit, simply reverse the above sequence.

Parts List Materials Requirements

1. *Connector assembly mounting screws*–Standard 4-40 x 1/4 inch commercial screws–hardened preferred.
2. *Connector assembly mount plate*–1/16 inch-thick sheet metal preferably 4140 steel gauge although mild steel is usable.
3. *Selector index plunger*–5/32 inch-diameter drill rod.
4. *Selector index plunger spring*–purchased or built–.020 diameter music wire spring. Stress relieved after forming. See specification.
5. *Selector index plunger and spring housing*–5/15 inch-diameter drill rod. Mild steel is usable. To be press-fitted and silver soldered permanently to selector lever.

5a. *Selector lever*–1/16 inch-thick sheet metal preferably 4140 steel gauge. If mild steel is used, case hardening is required on stress and contact points.



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6. *Selector index plunger pull knob*—3/8 inch-diameter drill rod. Mild steel is usable.
7. *Connector bar and rocker lever rivet*—.100 diameter drill rod.
8. *Rocker lever*—1/16 inch-thick sheet metal preferably 4140 steel gauge.
9. *Connector bar*—1/16 inch-thick sheet metal. The 4140 steel gauge is preferred. Mild steel is usable but must be case hardened after forming.
10. *Connector bar front screw support nut*—.185—.187 mild steel rod. Part is to be built and press-fitted to the receiver (right side) where the magazine catch roll pin is assembled. High-impact plastic material can be used as substitute.
11. *Connector bar front screw support*—Standard 4-40 x 1/4 inch commercial screw. Screw head thickness is reduced to .040.
12. *Tripping lever assembly screw*—Standard 4-40 commercial screw, hardened. See specs for screw length.
13. *Replacement secondary sear tripping lever*—1/16 inch-thick sheet metal. The 4140 steel gauge preferred.
14. *Selector lever assembly screw*—Standard 4-40 x 1/4 inch commercial screw-hardened preferred.
15. *Rocker lever assembly screw*—Standard 4-40 x 1/4 inch commercial screw. Hardened preferred.
16. *Replacement secondary sear connecting pin*—.140 diameter drill rod. Part is to be built, press-fitted and silver soldered permanently to sear.
17. *Replacement secondary sear*—1/8 inch-thick 4140 sheet metal gauge plate.

Note: All conversion parts if possible must be heat-treated accordingly for better and safer performance after final fitting and testing is performed.

6. Mini-14 Silencer Systems

The silencer system presented here can be easily manufactured from readily available materials. Zinc tubing and funnel-type couplings and caps used in the silencer construction are available from your local hardware or plumbing store. Cost for silencer materials is about twenty dollars.

Of course, no silencer (or supressor) can completely obviate the sound of any firearm, particularly those weapons firing supersonic cartridges with a muzzle velocity of over 1160 fps. Porting the barrel to slow down such bullets by bleeding off excess gas is the normal procedure required to achieve a reasonable silencing effect here. A handloaded round with a subsonic powder charge is another way of slowing down the bullet to a suitable silencing velocity. If practical, this is the suggested approach.

The system employed in this book does not completely silence the Mini-14. It will, however, reduce its muzzle crack to a level as low as any similar system which also does not require porting the barrel. The muzzle velocity of normal .223 ammunition (over 3000 fps) is therefore impossible to silence completely. The best approach would require porting the barrel and altering the slide group to a single shot, fully locked system that is manually operated after each firing. This would naturally require lots of work and special tools. In this case, we will settle for a design which is easier to build and which does not call for butchering the gun.

The silencer system designed for this project can be adapted to most intermediate high-power cartridges like Cal. .223, .308, M1 Carbine and other similarly powered cartridges used in modern combat assault rifles. The maximum length for silencer tubing is fifteen inches, which is necessary for the greatest silencing effect. A thick, heavy-duty baffle helps subdue sound and prevent muzzle crack. A dense rubber baffle will effectively limit sound but is less than desireable on full auto mode since it deteriorates faster than it does on semiauto. This silencer system matches or surpasses the Mini-14 silencers used by the military or law enforcement officers and costs much less.

In constructing a silencer for any firearm, the first imperative is straightness: all components that the bullet will travel through must be perfectly aligned to the bore axis. This is particularly true of the silencer tubing. If the tubing is bent, its internal components will follow its shape, the exit holes of the silencer components will not align, and the bullet will hit the baffle disks and destroy the silencer. This is also obviously dangerous to the operator.

The second vital factor in silencer construction is that all major internal components fit tightly together. Any play or looseness in fit will allow gas to escape which can contribute to misalignment of spacers, baffles, and other internal parts of the silencer. If this happens, the silencer is unsafe to use.

To check the straightness of the bullet's path of travel inside the silencer, assemble the unit to the Mini-14 without

the front rubber baffle in place. Instead, use a section of tubing the same size as the rubber baffle when it is squeeze-tightened into place with the front end cap. At this point, look inside from the muzzle end of the silencer after it is attached to the rifle with the tubing spacer in. You can now see if the spacer disk holes are in line with the bore. For best results, use a boresight flashlight or pen light inserted into the receiver to check the hole alignments.

After this visual check, find a straight rod or dowel which snugly fits the diameter of the bore and insert it into the barrel. No silencer components should touch it. This is your only assurance that the silencer components are aligned with the bore axis of the rifle barrel. *Never attempt to fire a weapon with a silencer that has doubtful bore alignment or serious injury to the operator or by-standers may result. Be Warned!*

To achieve the greatest silencing effect, handload your .223 ammunition at half-charge. This will reduce the muzzle velocity of the cartridge to near subsonic level and will just about cut the muzzle crack in half. Such a loading will still produce reasonable stopping power for a longer distance than submachine gun rounds will.

For optimum performance of the silencer system, convert the rifle from self-loading to single shot, slide-operated functioning. This will cause the bolt to remain closed and locked during and after the discharge. It will also prevent gas from escaping the chamber as well as from the gas bleed hole. Any gas escapement in these areas will produce a very audible sound and slam the slide during battery.

The Mini-14 can be converted to single shot slide action operation by simply replacing the original gas port bushing with a solid-type bushing that will block any gas from escaping into the barrel gas bleed hole. This will prevent the slide from being activated, thus restricting operation to single shot firing only. To fire the next shot, the slide must be manually retracted to extract the empty shell, recock the hammer, and load another round. Pulling the slide to the rear is all that is needed. When it is released from this position, the spring-operated slide will automatically pick up a round, chamber it, and lock the bolt in normal fashion. The weapon is then ready for the next shot.

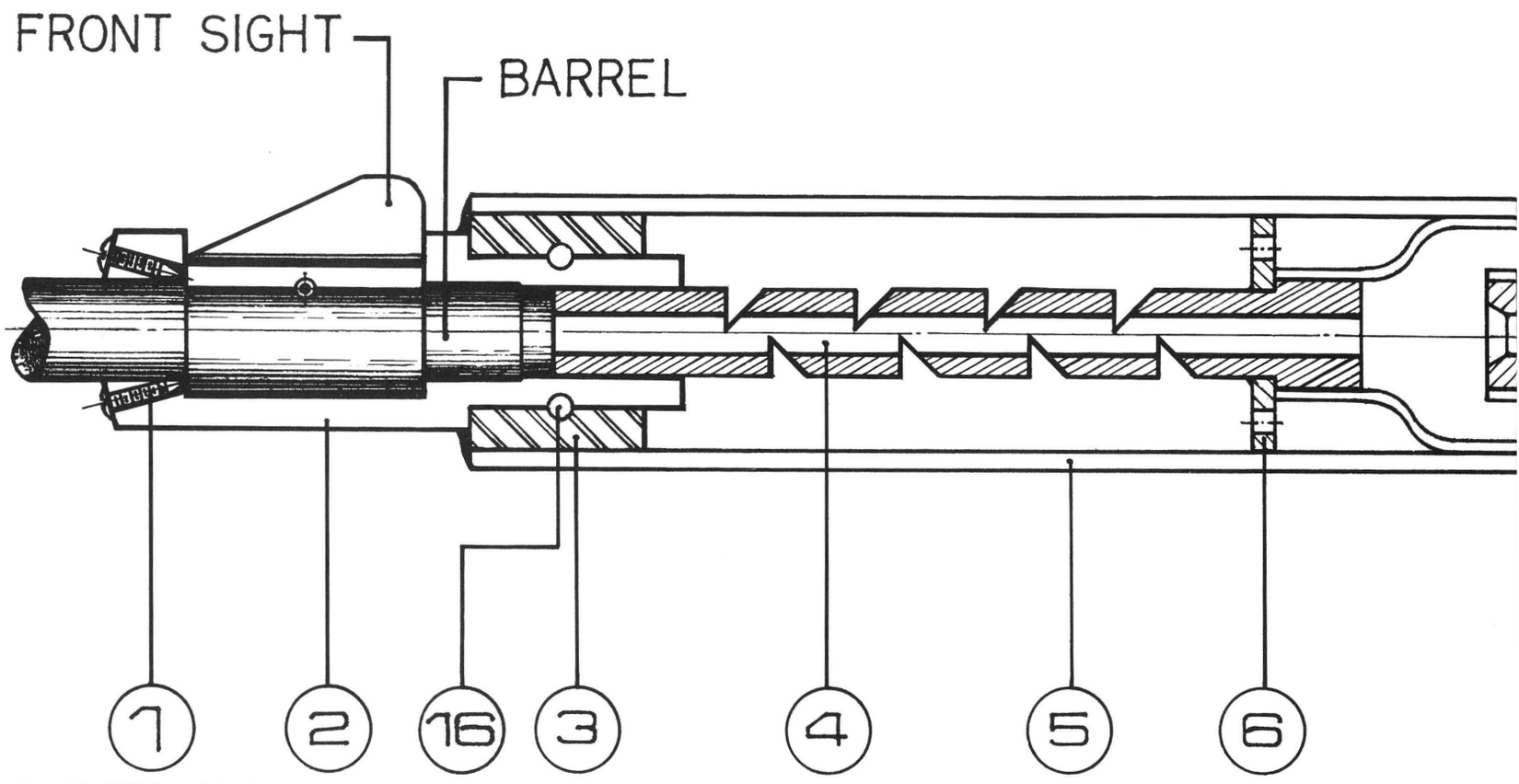
Mounting a silencer to the Mini-14 can be accomplished in two different ways. One design requires no threading of the barrel, but does require some machining for the barrel mount adapter. The second method is more efficient and easier to accomplish, although it does require threading the barrel and the silencer tubing rear plug.

When using the threaded assembly principle, it is ideal to build a replacement accessory such as a flash hider or muzzle brake that can be screwed on the barrel end when the silencer is not in use.

In the nonthreaded assembly, note that a muzzle end adapter mount is used. This device will enable the operator to assemble the silencer tubing to the weapon without threading the barrel end. It is, however, a more laborious task than using the threaded arrangement since the front sight must be removed each time the operator wants to mount the silencer to the barrel.

The nonthreaded-type silencer is assembled on the large square slot at the center of the adapter mount block, once the front sight has been removed. The silencer mount is then inserted over the muzzle until the front sight retaining pin hole is aligned with its seat. The mount assembly pin is then press-fitted in place. The rear end plug hole of the silencer is inserted in the rounded forward extension of the adapter mount block. When the two assembly holes for the adapter mount are aligned with the rear plug of the silencer, the assembly pins can be press-fitted. These dual pins will tightly hold the rear end plug of the silencer to the adapter mount.

After the silencer tubing has been attached to the barrel adapter, all components of the silencer can be assembled. (Refer to the cutaway diagram for assembly and proper relationship of silencer components.) Once this is done, screw in and tighten the dual silencer mount tightening screws to achieve maximum tightness and alignment precision.



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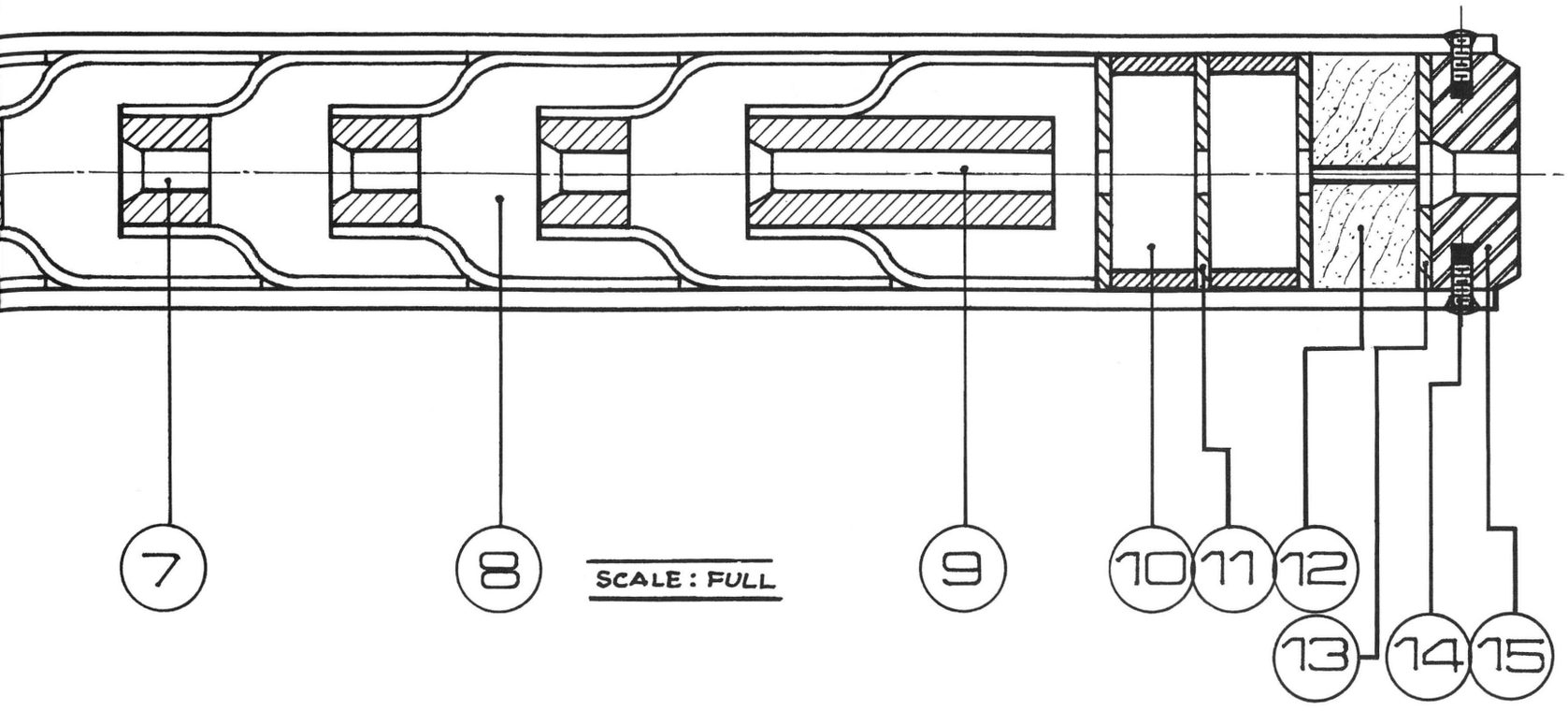
MINI-14 SILENCER PARTS LIST

1. *Mount tightening screw*—secures the complete silencer unit to the Mini-14 barrel.
2. *Silencer mount*—mounts the silencer snugly around the muzzle of the weapon.
3. *Silencer tubing rear plug*—seals rear end of silencer unit.
4. *Barrel extension*—bleeds off propellant gases after cartridge ignition through series of eight 30 degree ports.
5. *Silencer tubing*—contains all inner components of the silencer unit.
6. *Barrel extension end support*—centers and supports barrel extension within the silencer tubing.
7. *Gas trap sleeve bushing*—restricts center area of gas trap sleeve.
8. *Gas trap sleeve*—redirects propellant gases causing their dissipation.
9. *Front end gas trap sleeve bushing*—completes trap sleeve system.
10. *Baffle spacer*—creates final baffle spaces to trap propel-



lant gases before the bullet exits the silencer.

11. *Baffle disk*—unites with baffle spacers to form front end baffle spaces.
12. *Rubber baffle*—seals the front end of the silencer unit, allowing trapped propellant gases to slowly leak out of the silencer after cartridge ignition.
13. *Baffle disk*—completes front end baffle system.
14. *End cap screw*—secures end cap within silencer tubing.
15. *Silencer end cap*—holds in place all inner components of the silencer unit.
16. *Mount assembly pin*—secures entire unit to silencer mount tubing.

7. Test-Firing Preparations

Before testing the newly converted Mini-14 with live ammunition, conduct the following thorough test for proper functioning and fitting.

Semiautomatic Fitting and Adjustment

Assemble the entire weapon excluding the stock. Make certain that the new replacement secondary sear is installed in the trigger assembly. Screw the automatic connector unit to the receiver frame before assembling the trigger unit to the receiver group unit. Make sure that the recoil spring is assembled so you will be able to test the timing of the tripping and hammer release of the connector unit during full auto operation.

Without the stock, you can clearly see how the trigger and receiver components are assembled and how they function during firing. Note that the trigger guard front hook secures the front portion of the trigger housing frame to the receiver. Now grip the rear of the receiver with your left hand and press the trigger in normal firing fashion. *Caution: Be sure that the gun holds no live rounds in the chamber before taking off the safety and pulling the trigger. Always consider safety first. Never insert a loaded magazine into the weapon during the testing process.*

Check the position of the selector lever. If it is set on full auto, pull the knob up to clear its engagement with the connector group mount plate and move it to the rear setting for semiauto firing. Grip the rear of both the receiver and trigger housing frame with your left hand, and use your left-hand index finger to press the trigger. This will release the hammer to the "fired" position, where it will rest.

Observe that all components are now in their normal rest position with the hammer uncocked, no round in the chamber, and the safety off. Maintain the pressure on the trigger during this dry fire test to simulate the action of the weapon after the first shot is fired.

With your right hand, grasp under the extension of the slide where the recoil spring rod is assembled under the barrel. Do not pull the slide cocking handle or it will disconnect from the receiver since its lower part is not held by the stock. Watch carefully how the mechanism performs during this adjustment test.

With your left hand securing the rear and pressing the trigger, move the slide slowly to the rear to simulate recoil after the first shot is fired. Observe that the slide and connector bar will move rearward together for the first 3/16 to 1/4 inch. Then only the slide will travel rearward to unlock the bolt before both parts join in a rearward motion again to accomplish extraction, ejection, and recocking the hammer for the next shot. Stop briefly on the full recoil position. Hold the slide and observe the relationship of parts, particularly those of the automatic connector group mechanism and secondary sear. Maintain the pull on the trigger at all times.

Note that in this position, the secondary sear will make the first contact with the hammer. The connector bar moves 3/16 to 1/4 inch to the rear, the rocker lever moves to a vertical position, and the trip lever moves downward and forward so its connecting hook rests against the front edge of the square slot of the mount plate. Notice that the selector lever arm is not touching the trip lever even in its full upward motion.

After familiarizing yourself with the relationship of the mechanical parts on the full recoil position, move the slide slowly forward and observe its reverse action.

As you can see, the slide and bolt will again move forward together after full recoil. The bolt will lock into its locking recess assisted by the slide and will accomplish its full locking (bolt) process while the slide still has about 1/2 inch of travel before it comes to full stop. During the last 3/16 to 1/4 inch of forward slide travel, the slide cocking handle will make contact with the connector bar hook. As noted earlier, the connector bar retracts with the slide 3/16 to 1/4 inch to the rear during rearward recoil. The slide cocking handle will push the connector bar hook frontward, activating the automatic connector during forward recoil.

Observe closely the action of the connector group mechanism when the slide cocking handle makes contact with the connector bar hook. The connector bar will be forced forward by the slide cocking handle. The rocker lever will pivot forward with its upper portion pulled rearward by the connector bar. The rocker lever toe will force the trip lever toe upward. Note that the assembly retaining screw for the trip lever moves up and down through the oblong slot. This is necessary so that the trip lever will not pivot to the rear and so that contact with the secondary sear connecting pin is restricted.

As you have seen from the semiautomatic functioning, the main secret of the Mini-14's ability for selective firing lies with the oblong slot where the retaining screw for the sear trip is located. The selector lever arm in combination with the slot controls the basic action of the trip lever. The trip lever makes contact with the secondary sear connecting pin only if the selector is set to full automatic.

Note: If you wish to convert your weapon to full automatic only without selective firing capability, do not incorporate the oblong slot. Just drill a straight hole to provide for the sear trip pivoting action.

Now observe the position of all mechanical components after the slide and connector bar come to a full stop. If you have maintained your pressure on the trigger during the full rearward and forward cycle of the slide, the secondary sear and hammer are still in full contact. The trip lever bent hook protruding from the square slot of the mount plate moved only up and down during the operation; it did not make contact with the secondary sear connecting pin since the selector lever arm did not make contact with the sear trip lever.

Repeat the procedures and observe how uniformly and efficiently all components operate. Pay particular attention to the secondary sear connecting pin and the bent hook of the sear trip lever. These two parts should never make any contact whatsoever during semiautomatic operation. The two parts may touch during upward and rearward motion of the trip lever provided that the trip hook does not press the secondary sear connecting pin rearwards. If the secondary sear connecting pin were pressed rearward, it would automatically release the hammer to fire the weapon on full auto even though the selector was set on semiauto.

Make sure that the oblong slot offers enough clearance for the trip lever assembly screw to move up and down to prevent doubling or automatic firing. If the trip lever bent hook is pressing against the secondary sear connecting pin in its forward rest position, simply file the front edge of the square slot where it is assembled so it can move farther forward until the trip hook clears its unnecessary contact with the secondary sear connecting pin. Then the hammer can recock with the secondary sear during bolt rearward recoil.

If your automatic connector has performed well during the semiauto slide cycle test, repeat the procedure. This time work the slide as rapidly as possible to simulate a full rear-

ward and forward recoil action. Maintain your pressure on the trigger. During this test, the hammer must remain in fully cocked position as held by the secondary sear.

If the fast slide test action does not lead to unwanted full auto problems, then the semiautomatic function is functional and properly adjusted. Now release your pressure on the trigger. The trigger hook (primary sear) will automatically catch the hammer which is being released by the secondary sear. The weapon is now ready for the next shot. The system of operation is repeated on semiauto until the magazine is empty or until pressure on the trigger is released. The bolt will be held open after the last round has been fired.

Pay special attention to the points on this test checklist:

- Never attempt to fire the weapon with live rounds in it until the adjustment of all trigger mechanism components has been made and the fit is perfect.
- Make sure that all automatic connector parts are properly heat-treated.
- Polish and buff all contact surfaces before bluing.
- Do not use the large-capacity magazine during the first test series, but instead use the five-round clip supplied with the gun.
- Test the weapon in semiautomatic function for the first three rounds before switching the selector to full auto functioning for the last two rounds. If it performs well, fire the next five rounds on semiauto only. Reload and fire the next five rounds on full auto only.
- After this first test, disassemble the Mini-14 and check all the components for breakage, bending, misalignment, and other problems that may have occurred during the firing.
- If no problems are found, fire ten rounds gradually working up to thirty rounds if no malfunction is encountered.

Caution: Never switch the selector lever to full auto while pressing the trigger. Always put the safety on. Keep your finger OFF the trigger when you are switching the selector to any mode of firing.

Full Automatic Fitting and Adjustment

The basic test of the full automatic functioning uses the same procedure described for the semiautomatic mode with the following exceptions. *Note that the weapon still holds no live rounds in it.*

Imagine that the weapon is loaded with a round in the chamber; the hammer is cocked and an imaginary loaded magazine is inserted, ready to fire the next shot. Before moving the selector lever to full auto setting, be certain that the safety is on. Now, pull the selector index knob up and move it forward to the full auto setting. When your finger is off the trigger, the hammer is held in the fully cocked position by the trigger hook (primary sear) when the slide is pulled rearward to cock and load the Mini-14. For this reason, even if the secondary sear connecting pin and trip hook are accidentally engaged during selector change, the hammer cannot be released as it is being held in fully cocked position by the primary sear (trigger hook), not by the secondary sear. With the safety on, accidental discharge is totally prevented as the trigger and hammer are locked together.

After the selector lever is moved to full auto setting, take off the safety when you are ready to fire. Now grip the rear end of the receiver frame and trigger housing frame just as you did in the semiauto test procedure. Press the trigger to put the hammer on "fired" position. Now grip under the extension of the slide so you can move it rearward and forward just as you did during the semiauto test.

As described earlier, the connector unit is controlled solely by the engagement and disengagement of the slide cocking handle and connector bar hook during recoil of the slide. You may, therefore, follow the test sequence prescribed for semiauto functioning.

While pressing the trigger, move the slide all the way to the rear. Note that the selector lever arm is now almost touching the circular shoulder of the trip lever. The hammer and secondary sear will engage first in the same way they do

when they are recocked by the bolt. The sear trip is fully forward and downward and is lightly touching the secondary sear connecting pin. The rocker lever is on its vertical position and the connector bar is retracted rearward 3/16 to 1/4 inch. This must be the position of all mechanical components when the bolt and slide are in full rearward recoil position and the selector lever is set on full auto.

Now ease the bolt forward and observe the action of the automatic connector as the slide cocking handle and connector bar hook move forward together. The upper part of the rocker lever is pulled frontward by the connector bar. The rocker lever toe forces the trip lever toe to move upward. As noted, the selector lever arm is now riding over the circular shoulder of the trip lever preventing it from moving upward as it does in semiauto function. Observe that the secondary sear and sear trip lever hook now parallel one another and are lightly touching. During the last 1/8 inch of travel made by the slide and connector bar, the trip hook will force the secondary sear connecting pin rearward where it will release the hammer when the slide and connector bar come to a full stop.

Since the pressure on the trigger is maintained during the full auto cycle of operation, the trigger hook (primary sear) will not engage the hammer. Only the secondary sear will make contact with the hammer on full auto functioning while the trigger is being pulled. The connector bar mechanism will act as a mechanical trigger and trip the secondary sear each time the slide closes. When pressure on the trigger is released in full auto mode, the hammer will be automatically released by the secondary sear; it will be caught and held in fully cocked position by the primary sear (trigger hook).

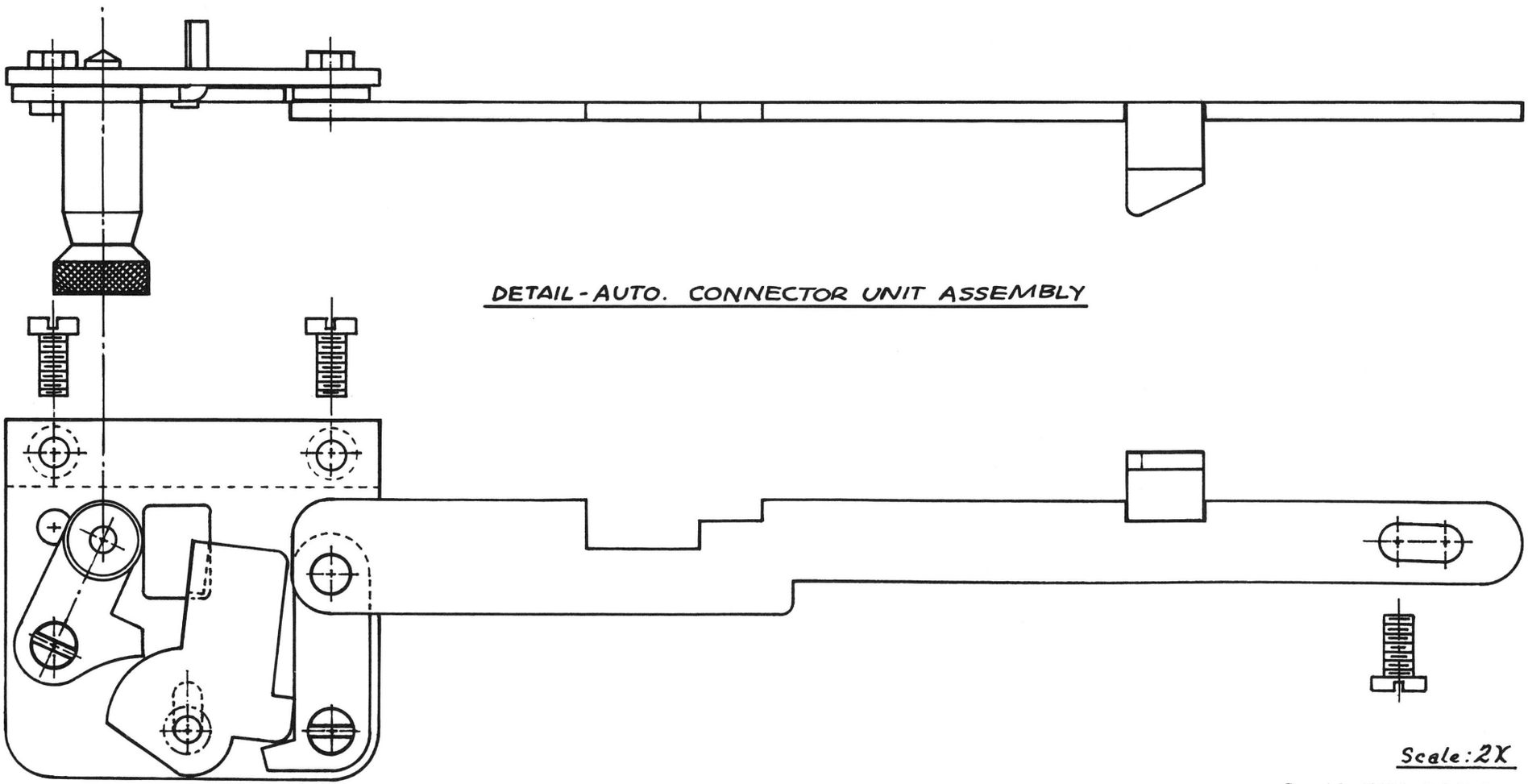
If you wish to change the selector to semiauto functioning after firing on full auto, put on the safety *before* moving the selector lever.

Repeat the slide test for the full auto functioning while rapidly moving the slide until you are absolutely certain that it works perfectly. Note any irregularities such as tightness, loosening of parts, or any other factor that may contribute to malfunctioning. Apply Loctite to the threaded parts of the retaining assembly screws of the automatic connector group mechanism to prevent them from loosening during operation. You can also rivet the screw ends permanently once you have calculated the distance of travel their parts need to function freely.

Caution: It is critically important that the bolt fully close before the hammer is released by the tripper. A half-locked bolt is very dangerous and the gun should never be fired in this position.

Make sure that the trip lever hook will only push the secondary sear connecting pin the last 1/8 inch or less of forward slide travel. If the hammer is released too soon, correct the timing by filing the metal at the bent part of the connector bar making direct engagement with the slide cocking handle. This way you can perfect the proper timing of the hammer release and correct the distance for slide and connector bar engagement.

8. Machinist's Drawings and Templates



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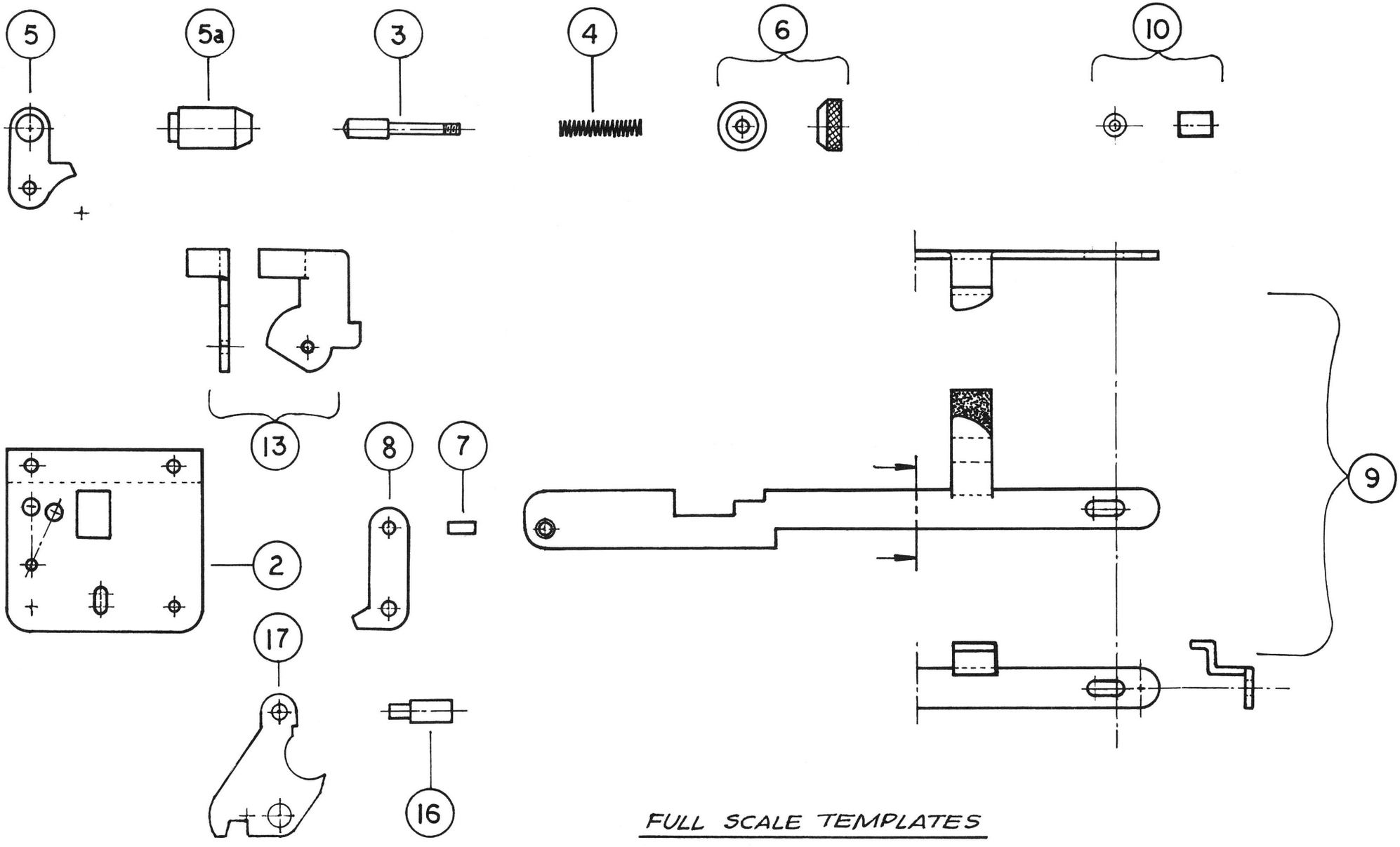

FULL SCALE TEMPLATES

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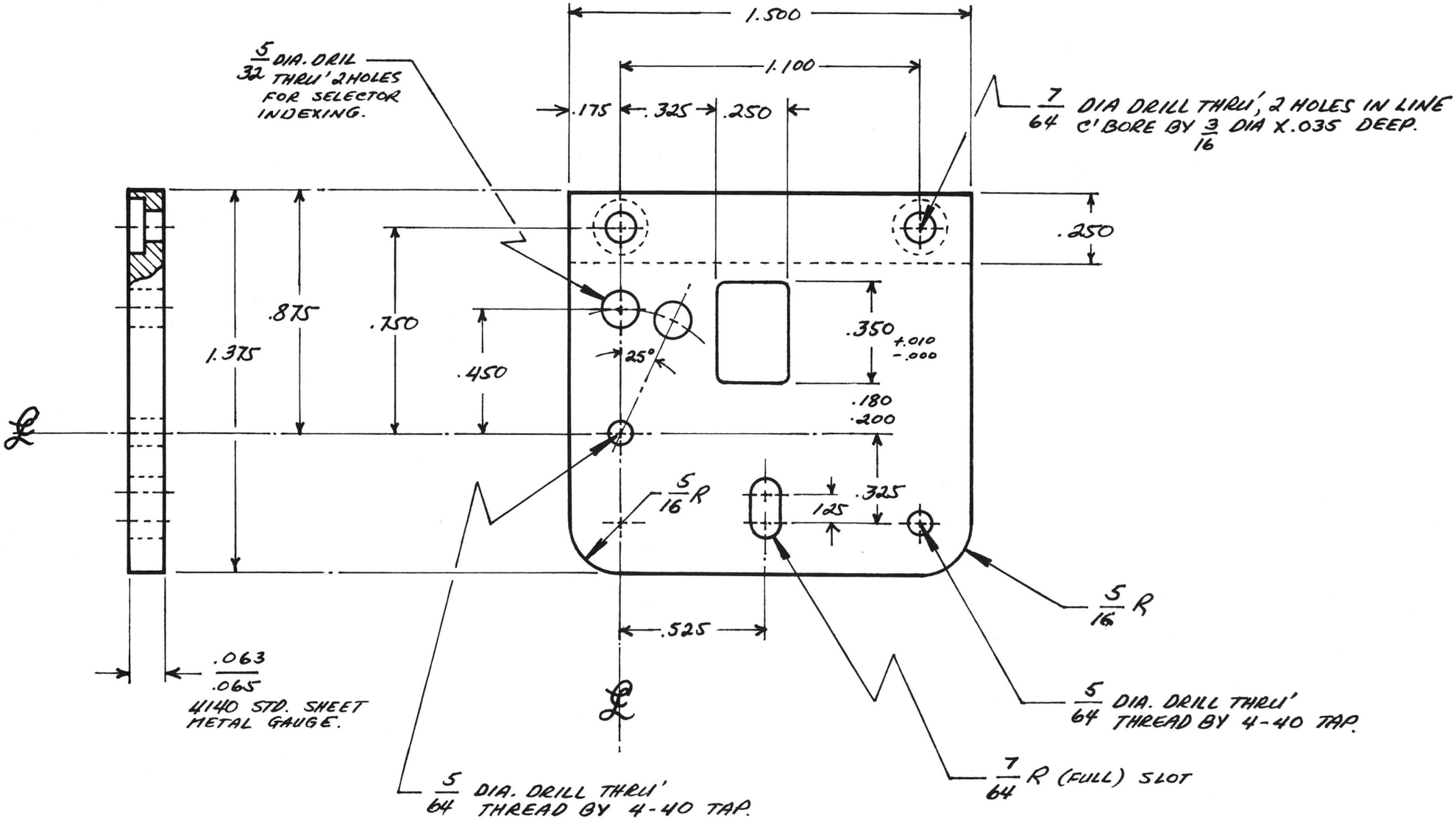

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PART #2 CONNECTOR ASSEMBLY MOUNT PLATE

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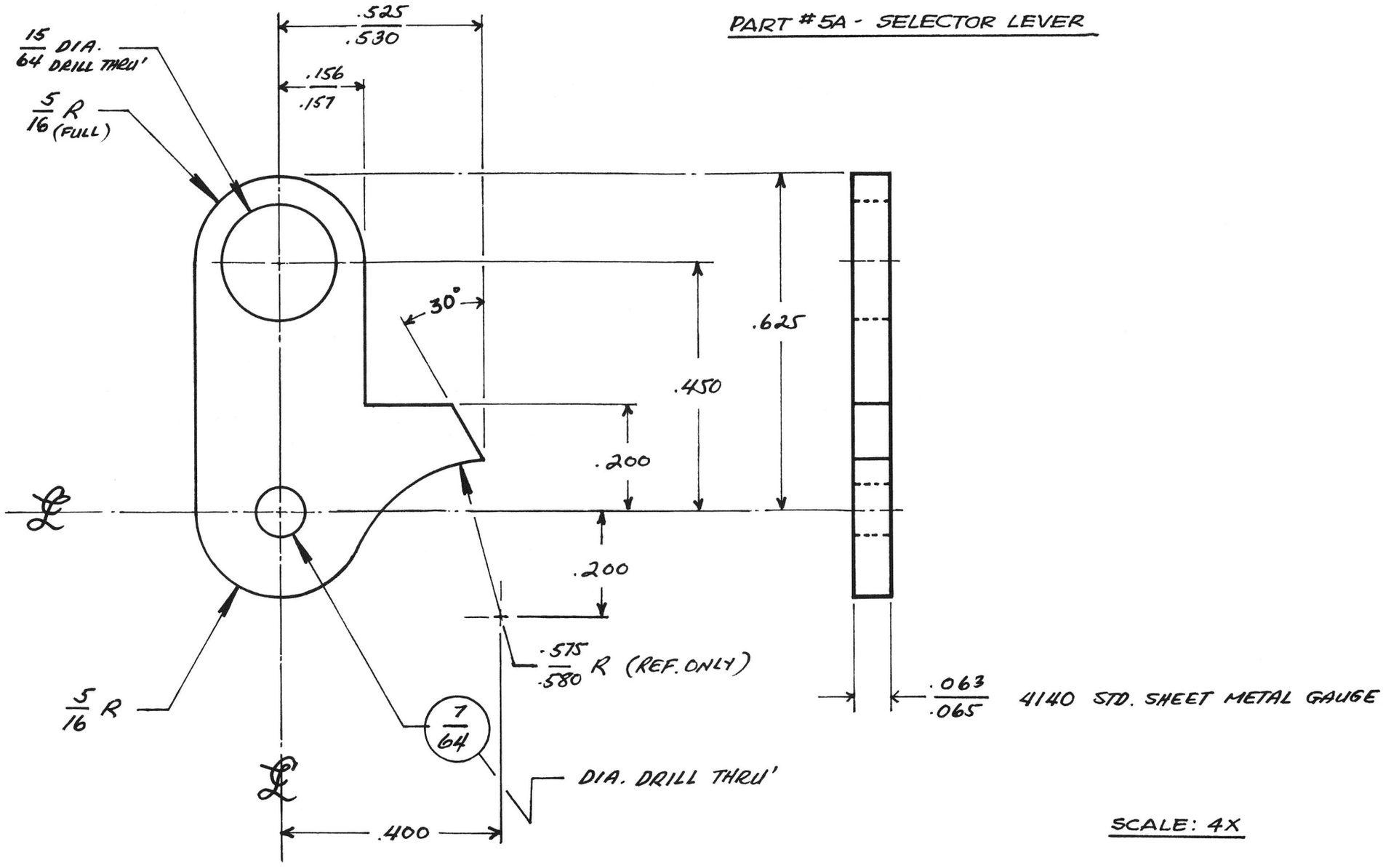

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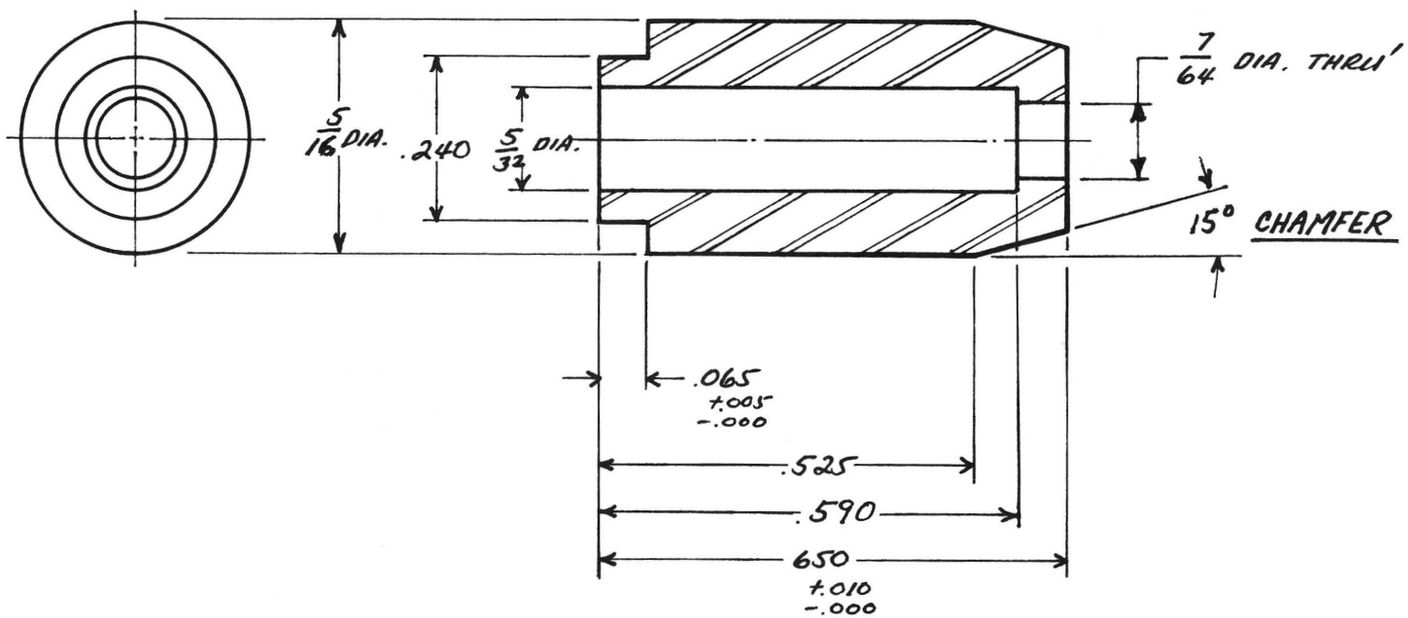
PART #5 SELECTOR INDEX PLUNGER & SPRING HOUSING



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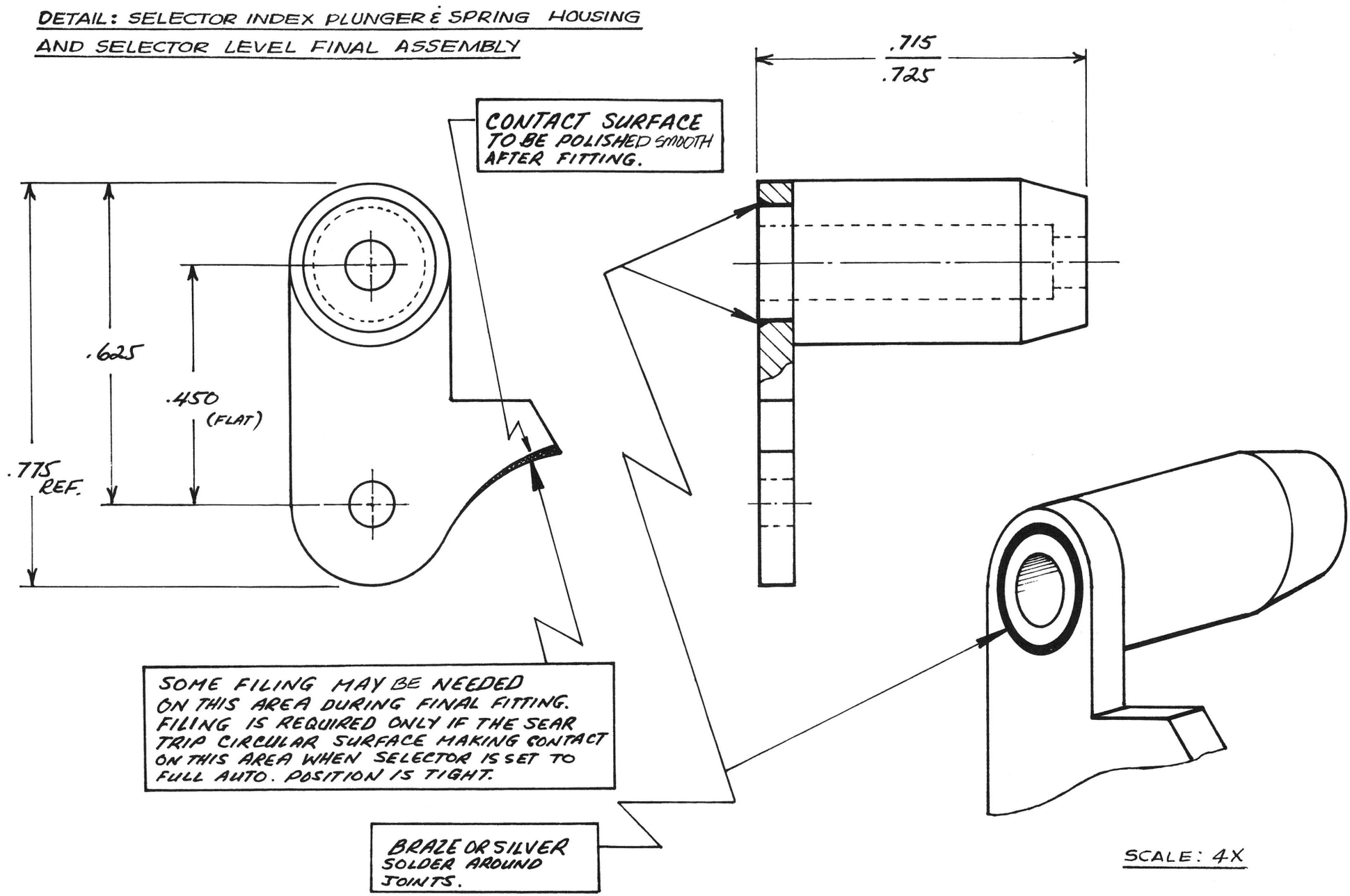
DETAIL: SELECTOR INDEX PLUNGER & SPRING HOUSING AND SELECTOR LEVEL FINAL ASSEMBLY
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CONTACT SURFACE TO BE POLISHED SMOOTH AFTER FITTING.
.625
.450 (FLAT)
.775 REF.
SOME FILING MAY BE NEEDED ON THIS AREA DURING FINAL FITTING. FILING IS REQUIRED ONLY IF THE SEAR TRIP CIRCULAR SURFACE MAKING CONTACT ON THIS AREA WHEN SELECTOR IS SET TO FULL AUTO. POSITION IS TIGHT.
BRAZE OR SILVER SOLDER AROUND JOINTS.
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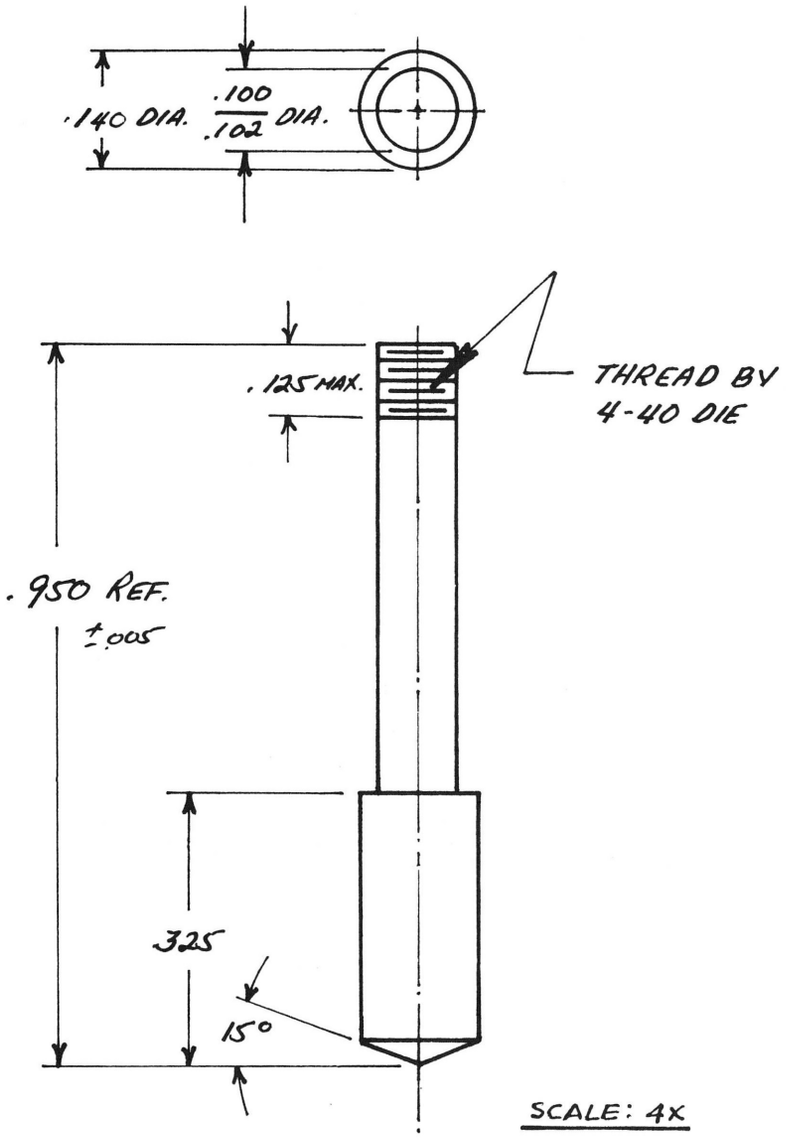
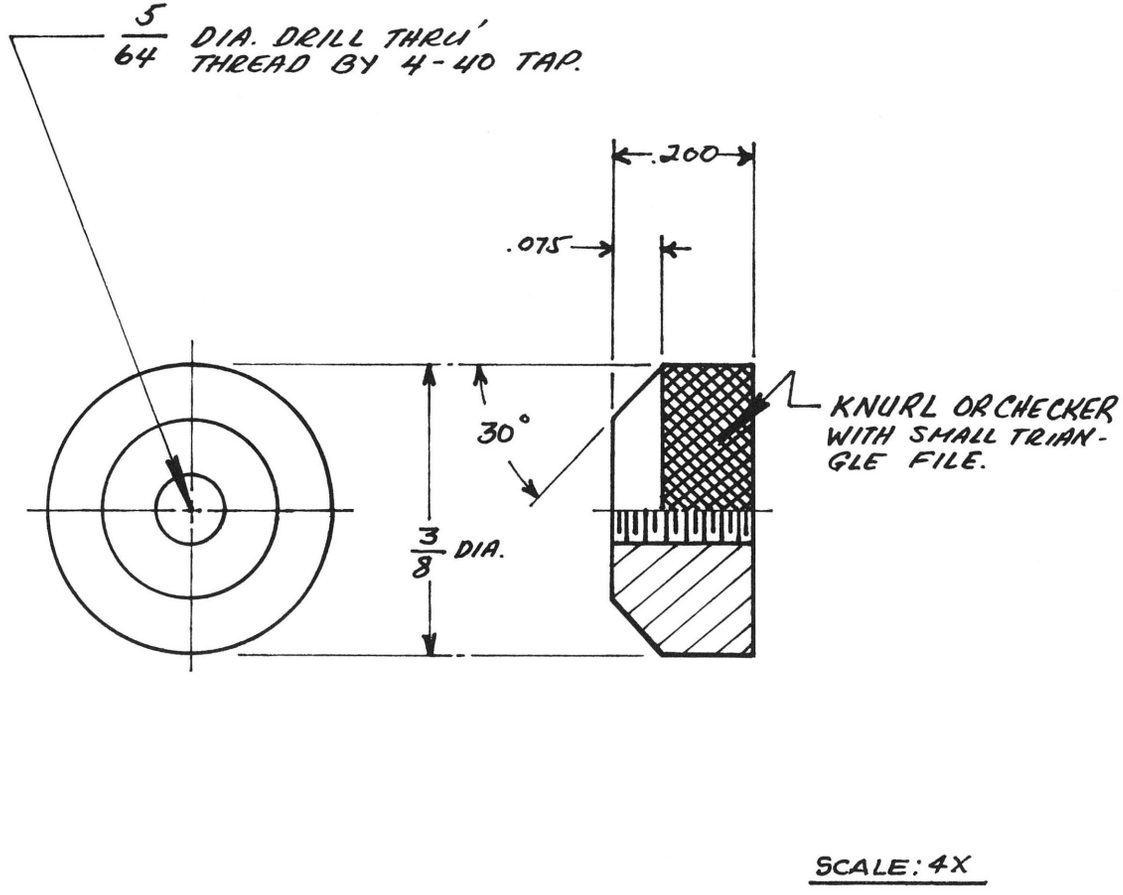


PART #3 SELECTOR INDEX PLUNGER



PART #6 - SELECTOR INDEX PLUNGER PULL KNOB

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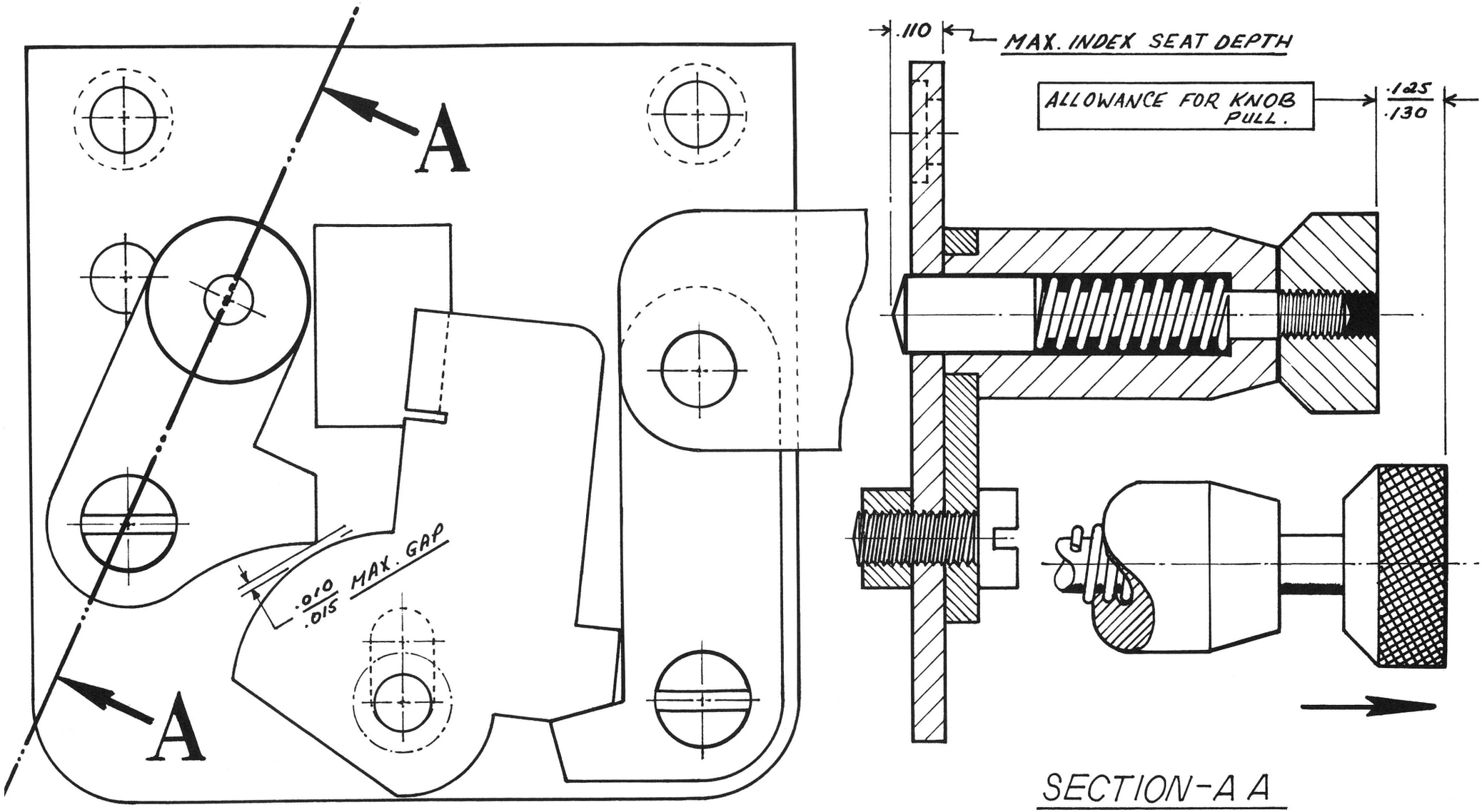

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DETAIL - SELECTOR/INDEX ADJ.

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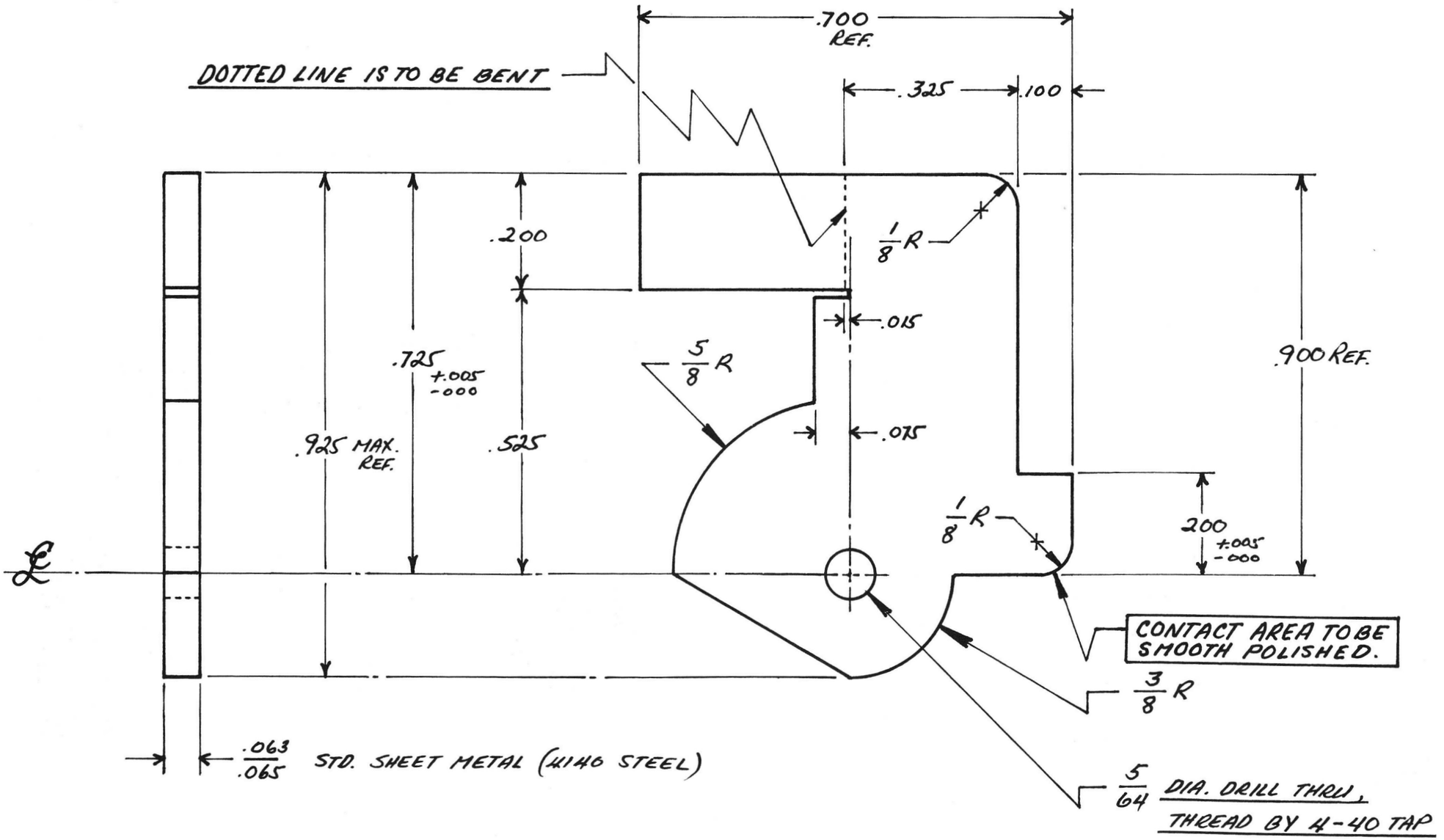

PART #13 SEAR TRIP LEVER

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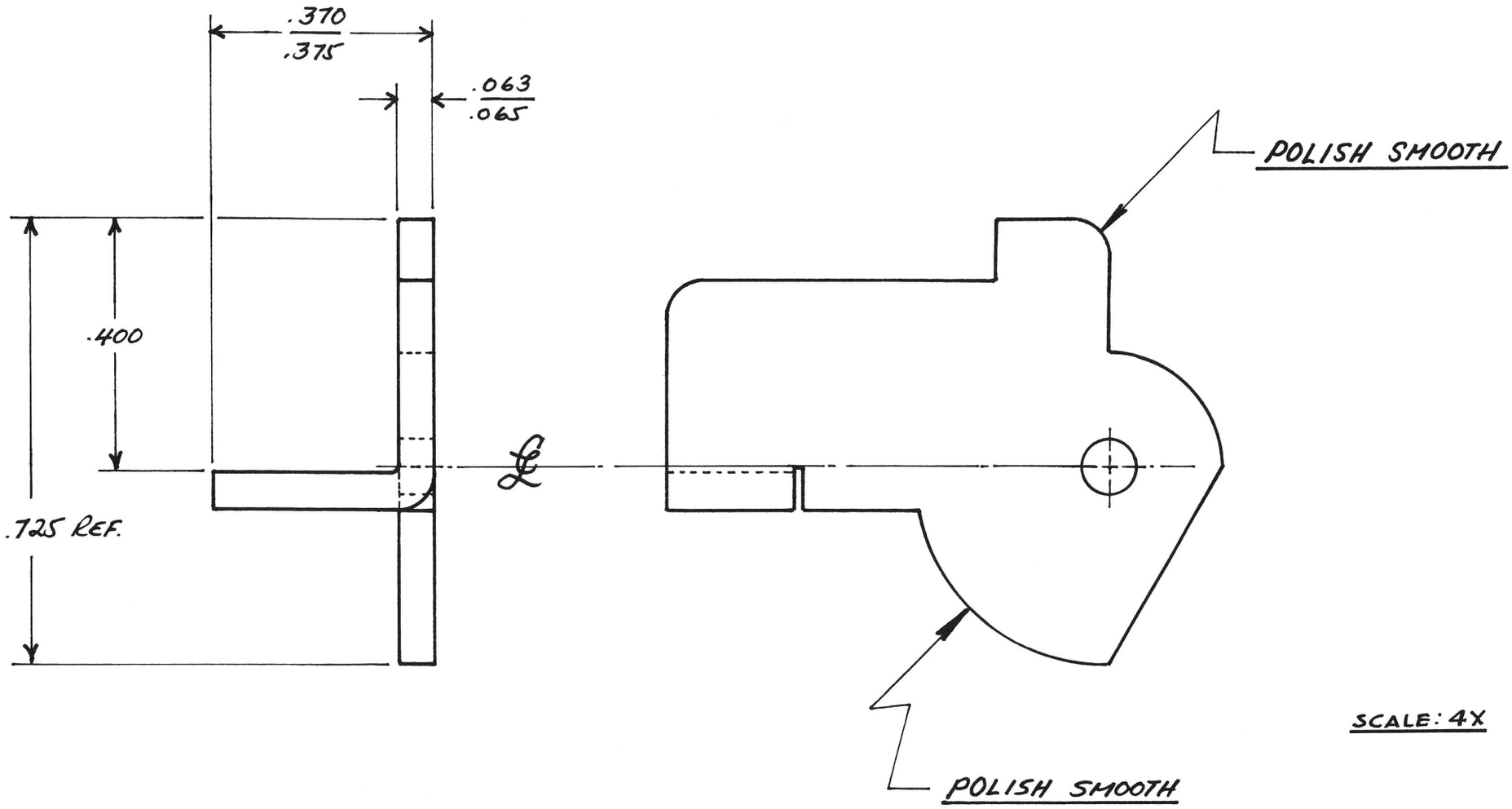

DETAIL- SEAR TRIP LEVER AFTER FORMING & FITTING

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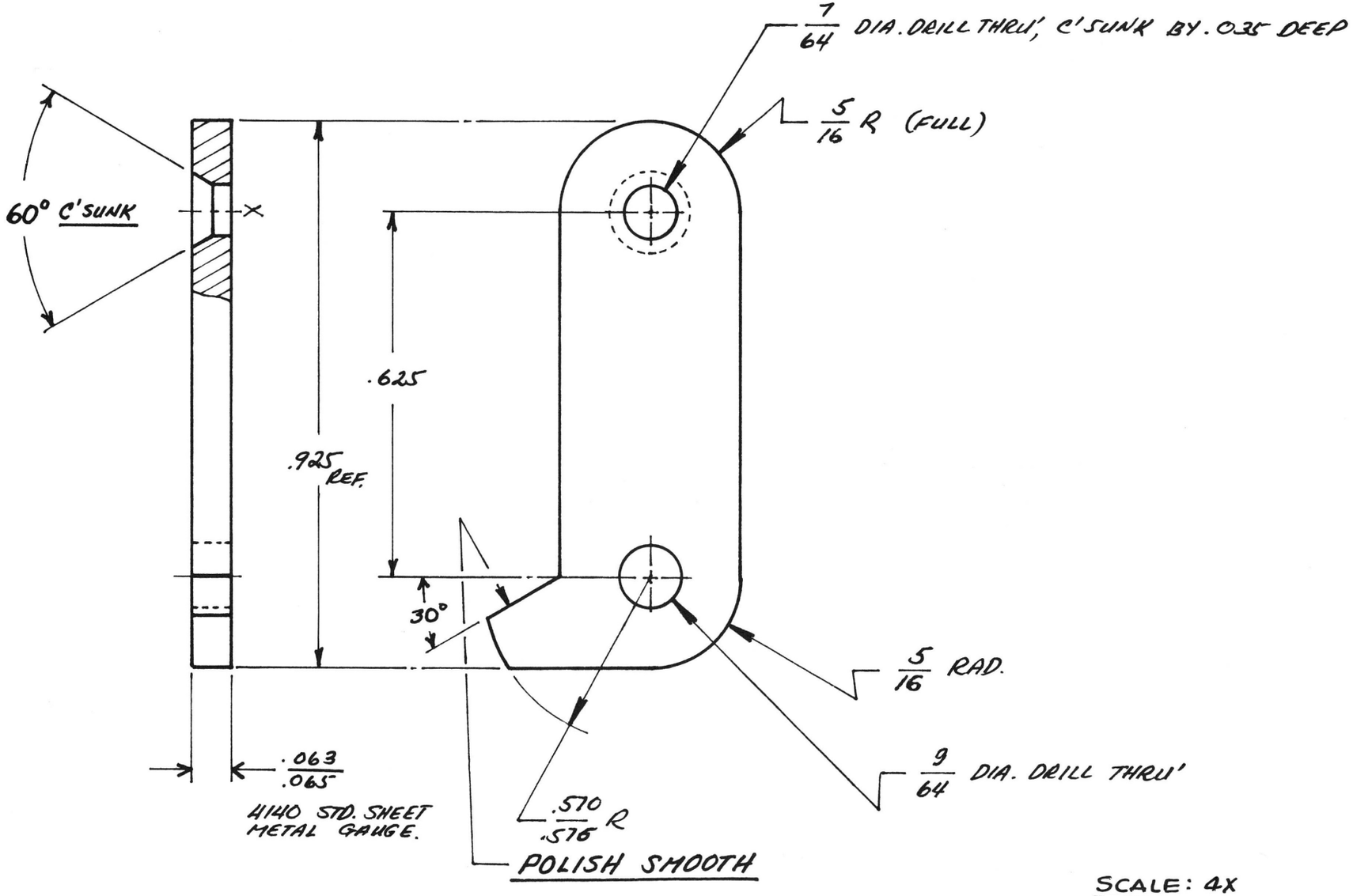

PART# 8 - ROCKER LEVER

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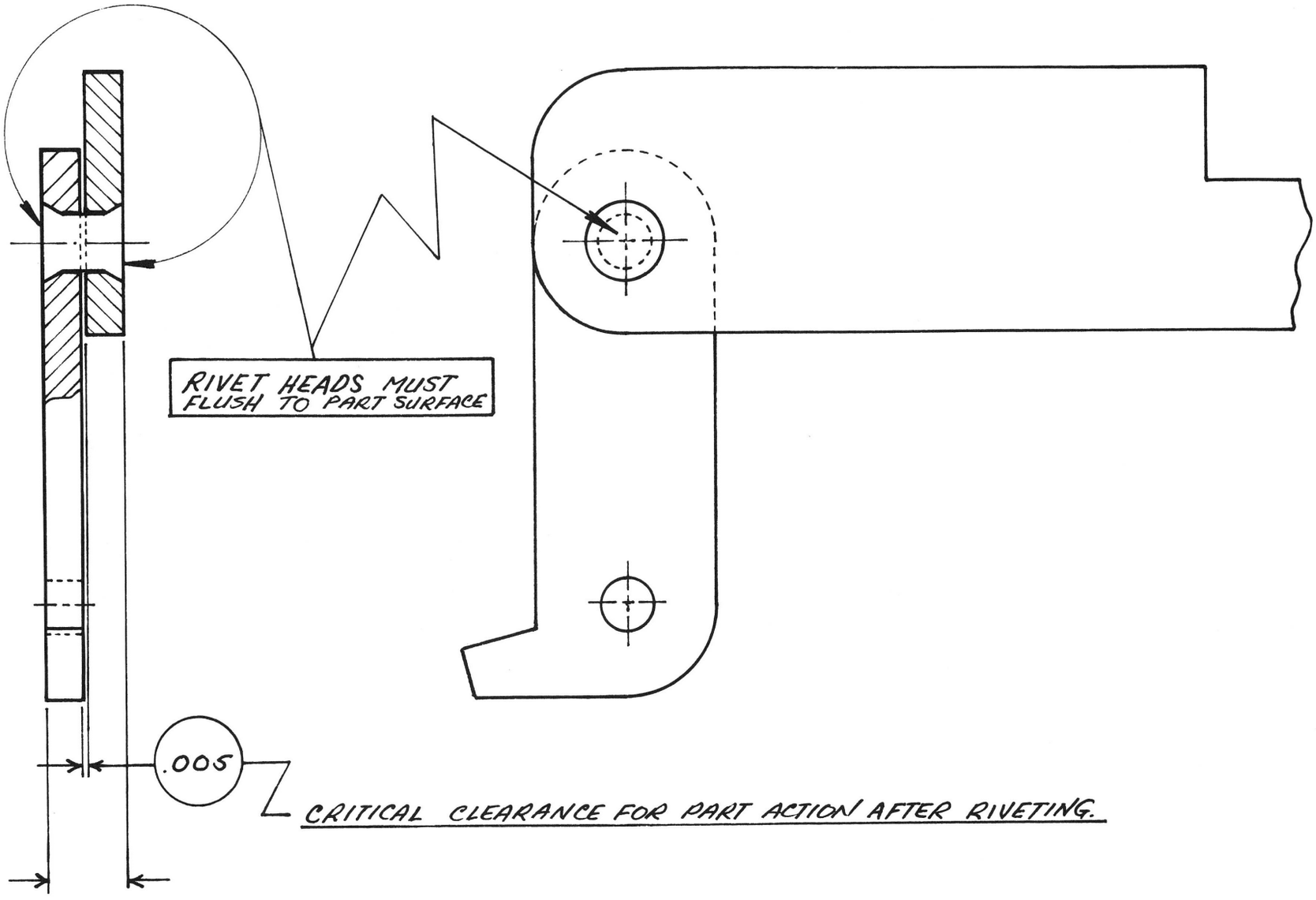

ASSEMBLY DETAIL - ROCKER & CONNECTOR BAR

SCALE: 4X

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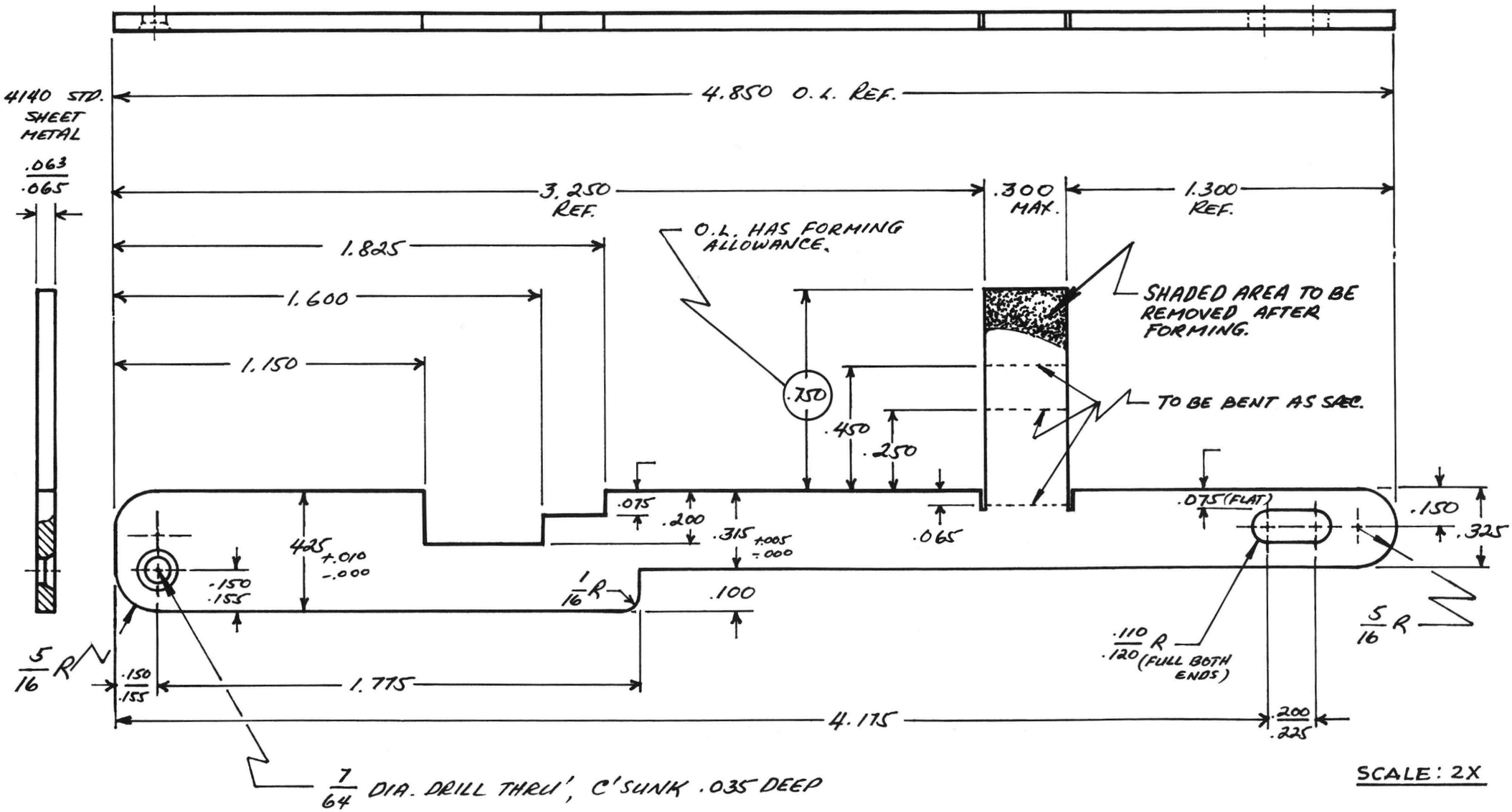

PART #9 - CONNECTOR BAR TEMPLATE DIMENSION BEFORE FORMING

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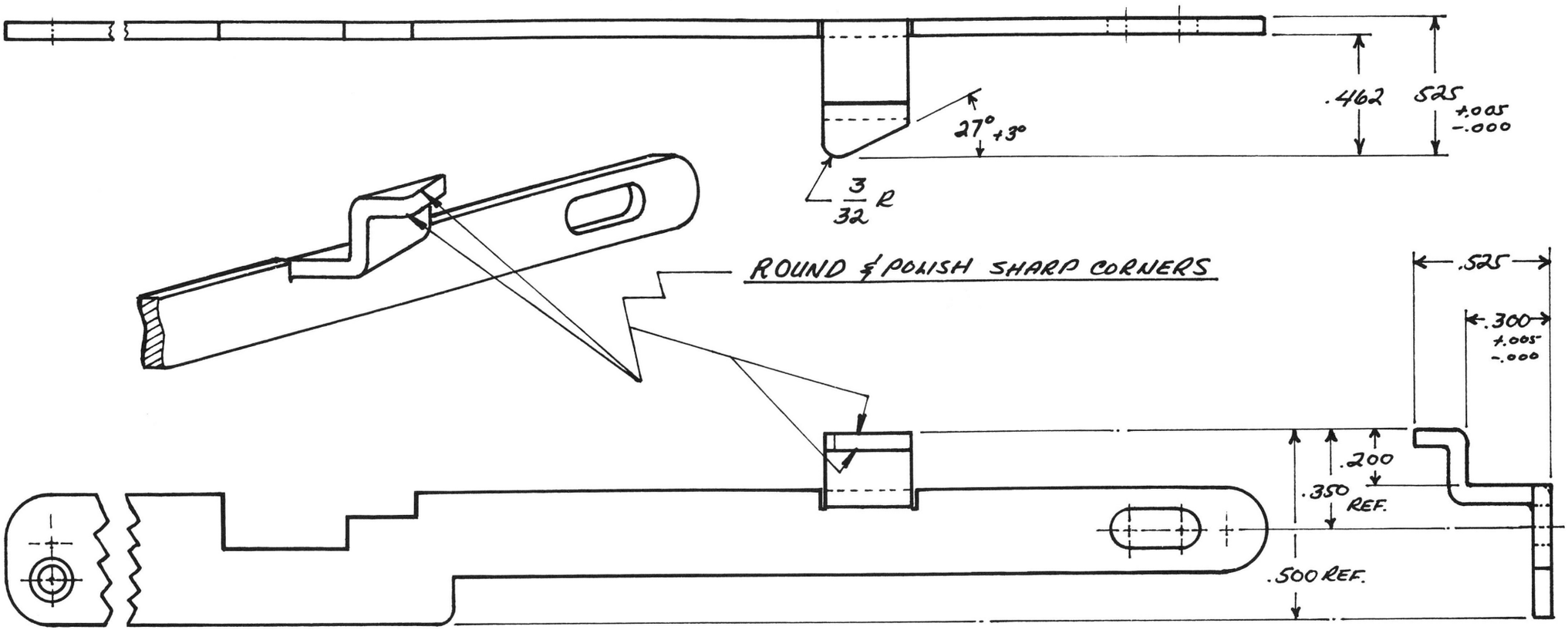

SCALE: 2X

DETAIL: CONNECTOR BAR AFTER FORMING AND FINAL FITTING (MACHINING)

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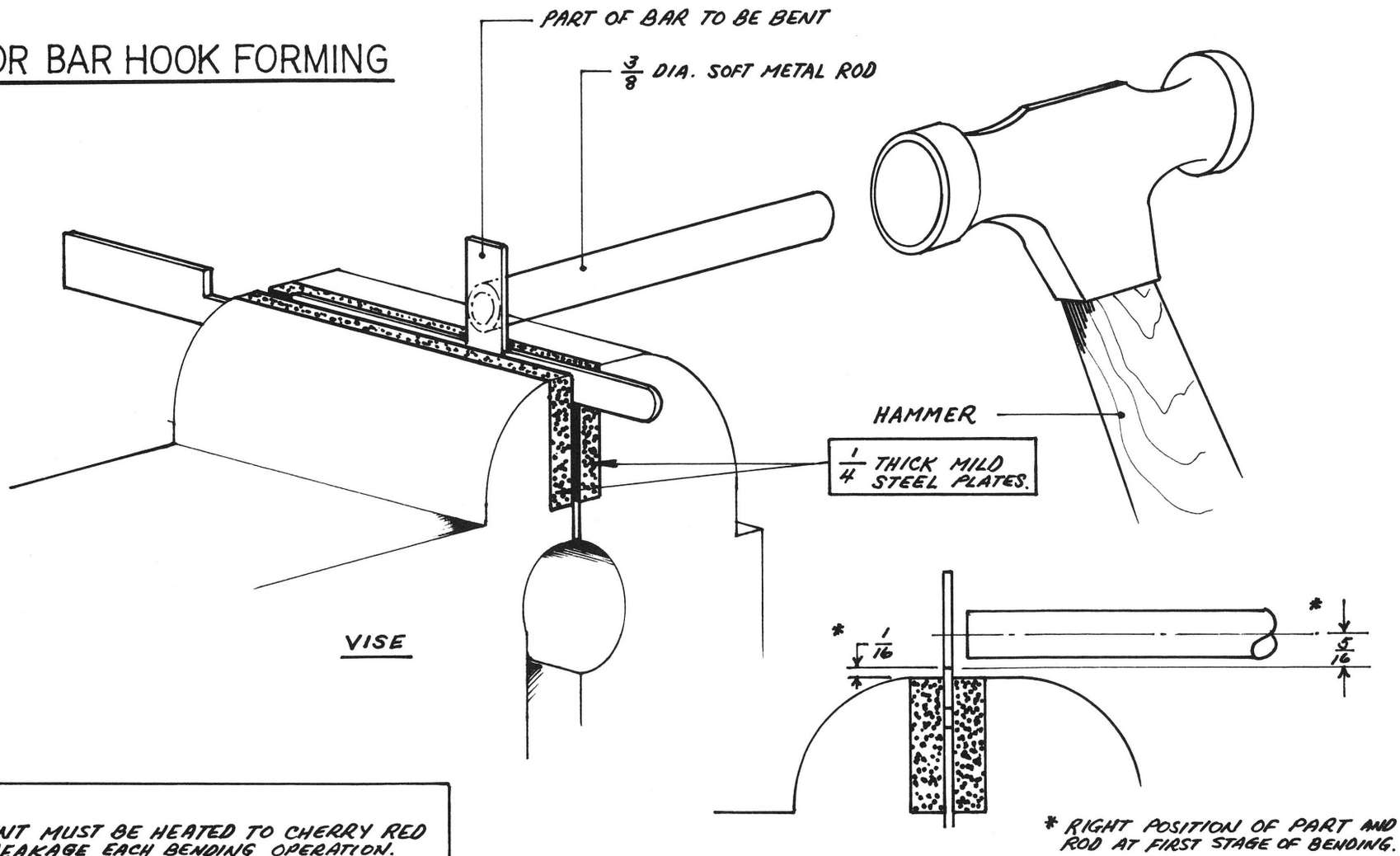
CONNECTOR BAR HOOK FORMING



IMPORTANT:
PART TO BE BENT MUST BE HEATED TO CHERRY RED TO PREVENT BREAKAGE EACH BENDING OPERATION.

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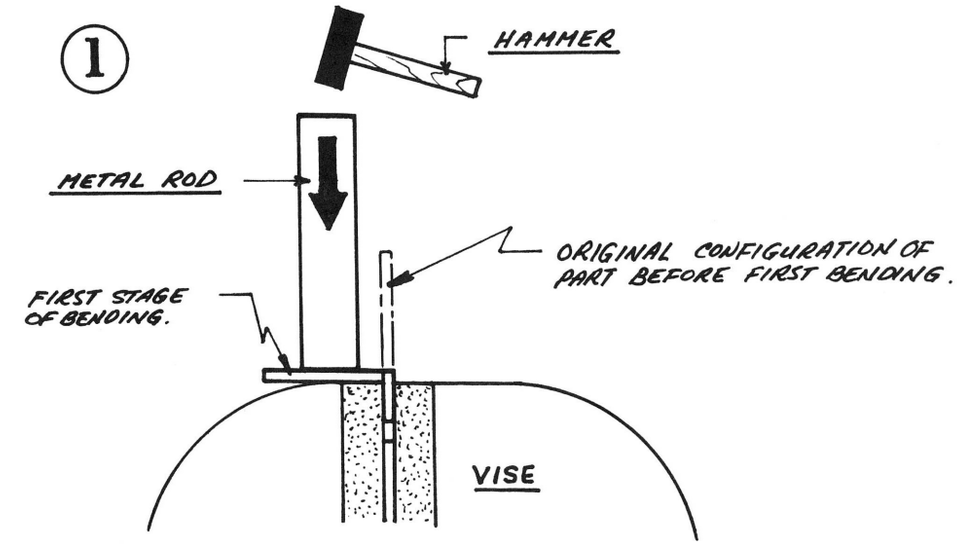
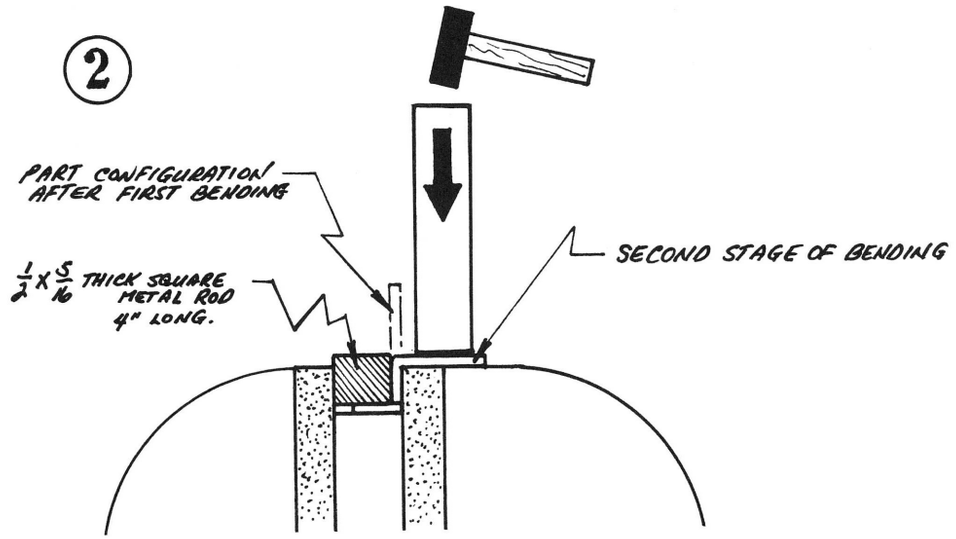
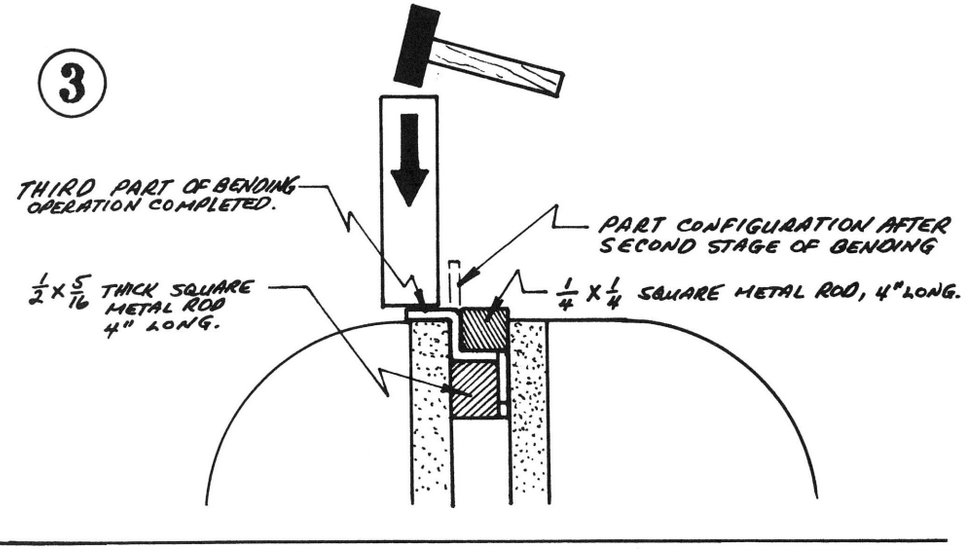
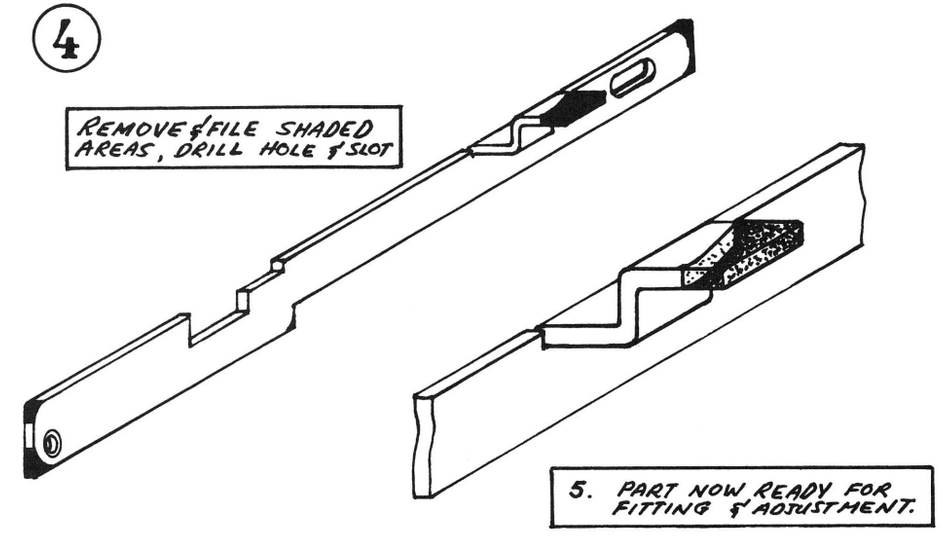





3
THIRD PART OF BENDING OPERATION COMPLETED.
PART CONFIGURATION AFTER SECOND STAGE OF BENDING
1/2 X 5/16 THICK SQUARE METAL ROD 4" LONG.
1/4 X 1/4 SQUARE METAL ROD, 4" LONG.



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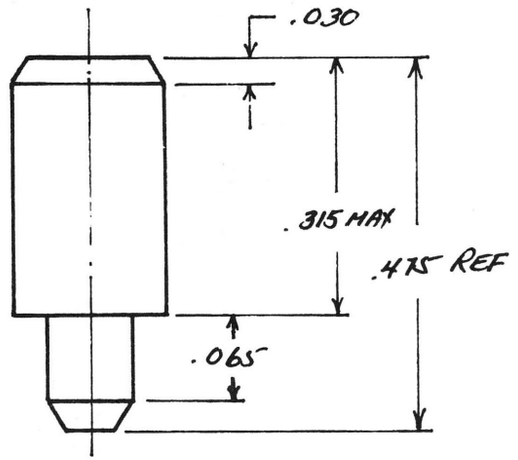
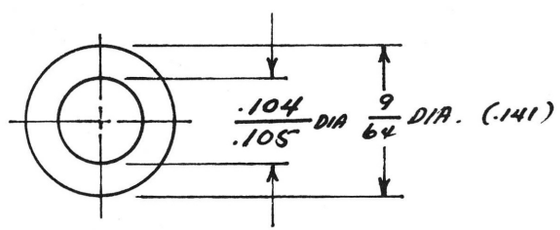
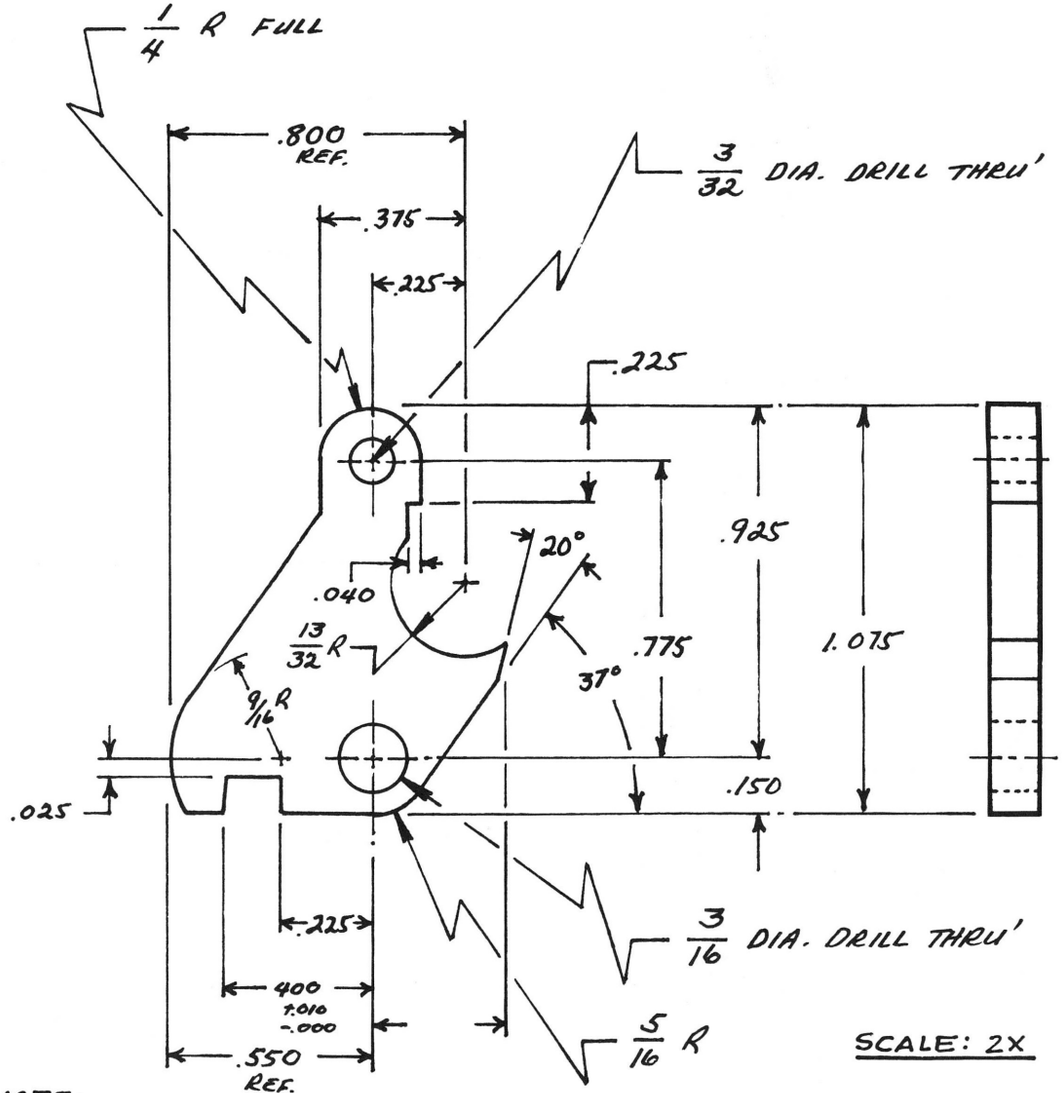




PART # 16 - REPLACEMENT SECONDARY SEAR CONNECTING PIN

SCALE: 4X

PART # 17 - REPLACEMENT SECONDARY SEAR



NOTE: DIMENSIONS ARE FOR REFERENCE ONLY. THE ORIGINAL FACTORY SEAR MUST BE COPIED EXCEPT THE TOP PART WHERE CONNECTING PIN IS REQUIRED.

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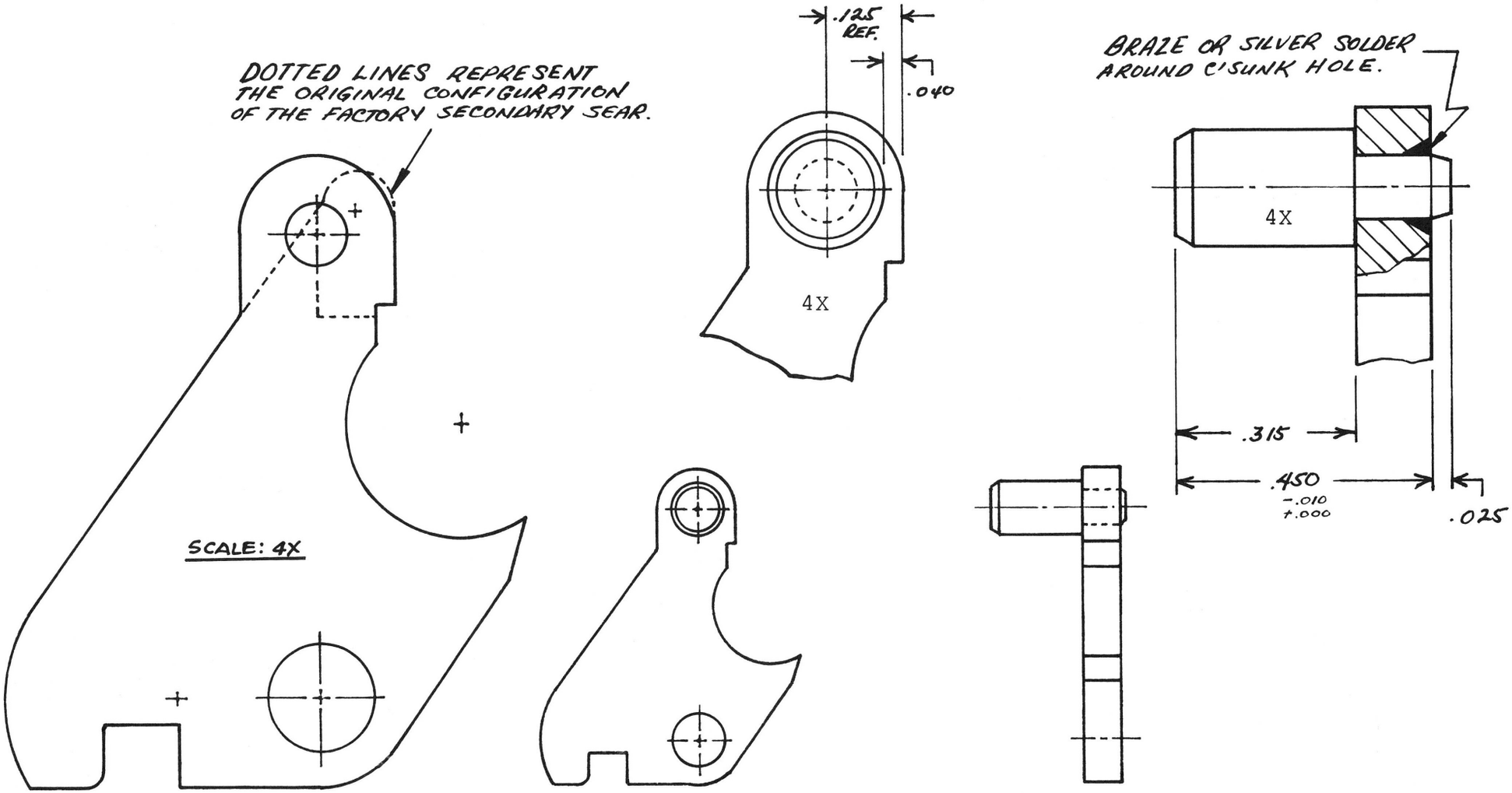

DETAIL: REPLACEMENT SECONDARY SEAR & CONNECTING PIN ASSEMBLY

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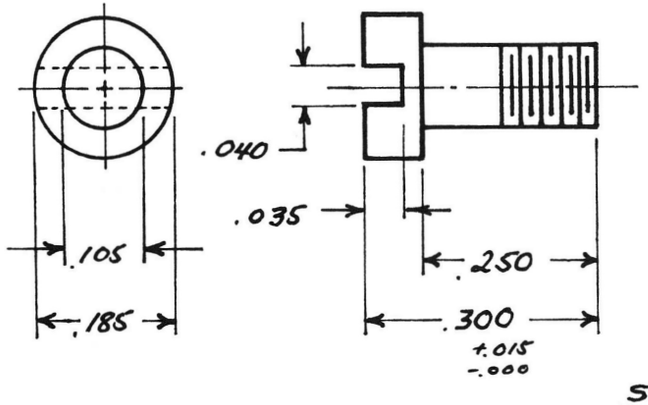
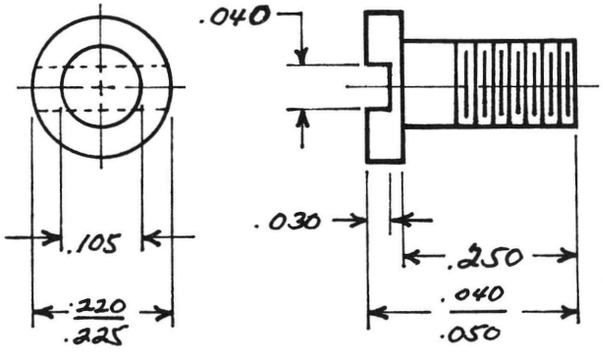
PART # 1, 14 & 15 (SEE EXPLODED VIEW DRAWING)



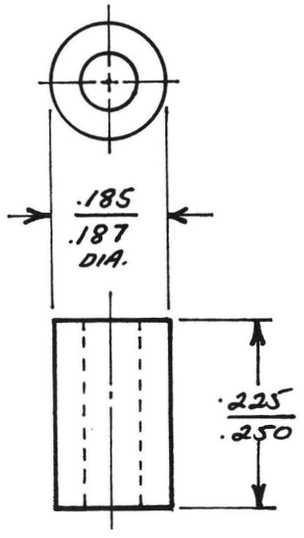
SCALE: 4X

PART # 11



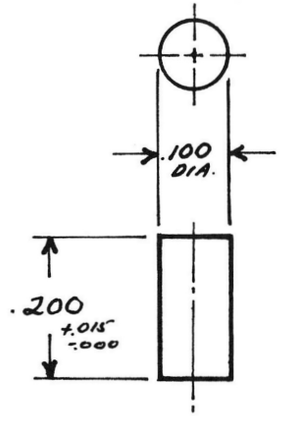
SCALE: 4X

PART # 10



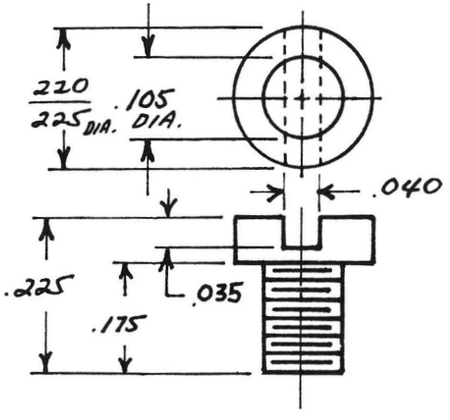
SCALE: 4X

PART #7



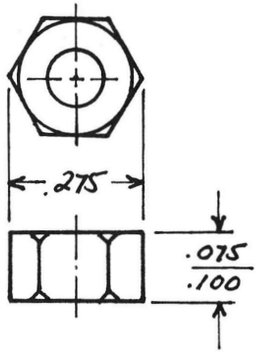
SCALE: 4X

PART #12



SCALE: 4X

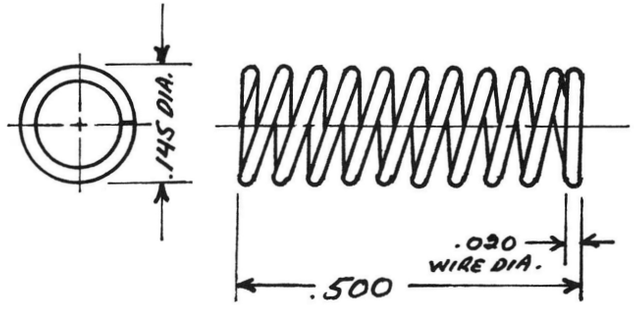
*(OPTIONAL)



SCALE: 4X

* NUT FOR PART #14 & 15
STD. 4-40 HEX TYPE.

PART #4



10 COILS MAX

SCALE: 4X

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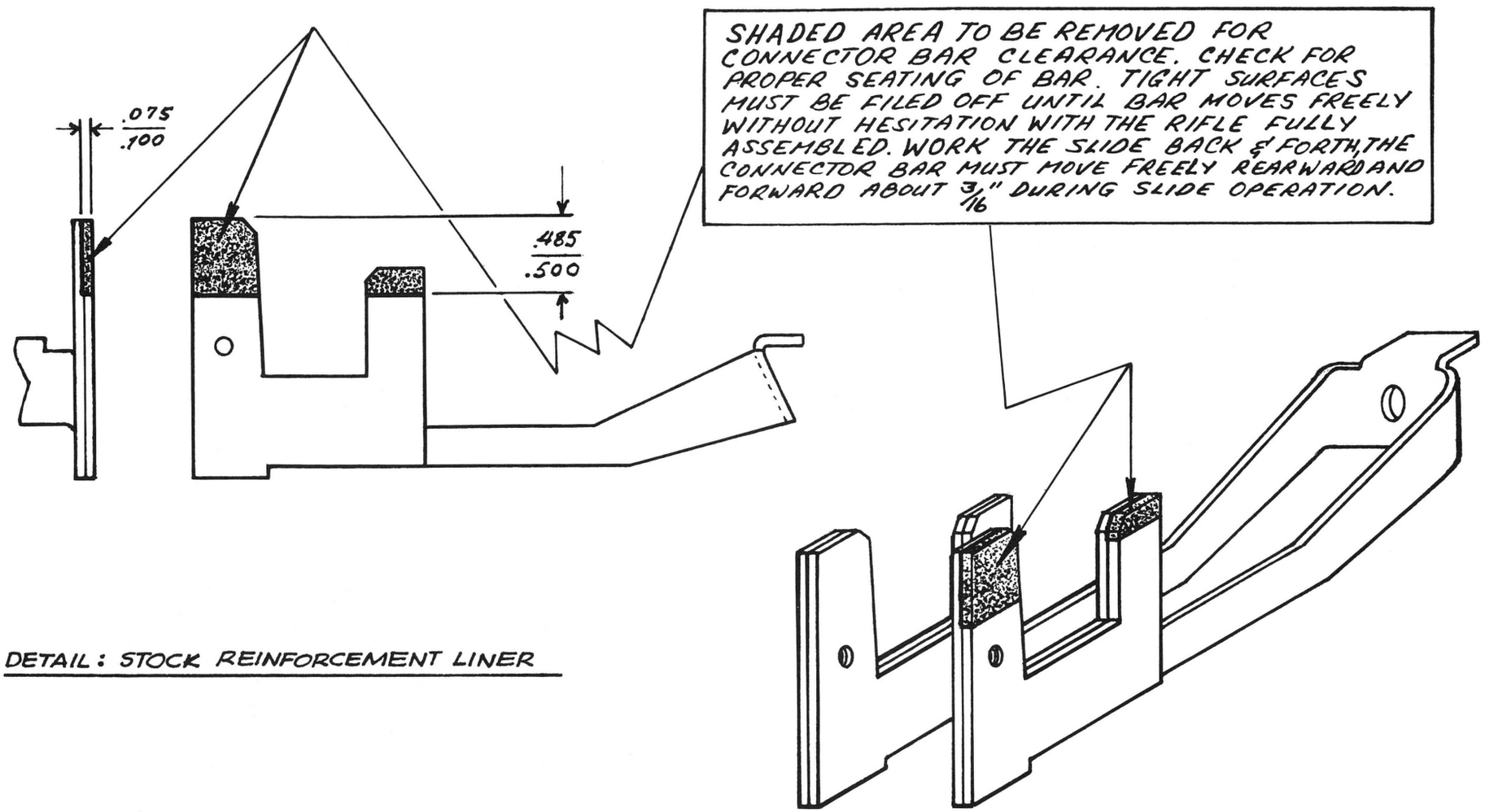
.075
.100
.485
.500
SHADED AREA TO BE REMOVED FOR CONNECTOR BAR CLEARANCE. CHECK FOR PROPER SEATING OF BAR. TIGHT SURFACES MUST BE FILED OFF UNTIL BAR MOVES FREELY WITHOUT HESITATION WITH THE RIFLE FULLY ASSEMBLED. WORK THE SLIDE BACK & FORTH, THE CONNECTOR BAR MUST MOVE FREELY REARWARD AND FORWARD ABOUT 3/16" DURING SLIDE OPERATION.

DETAIL: STOCK REINFORCEMENT LINER

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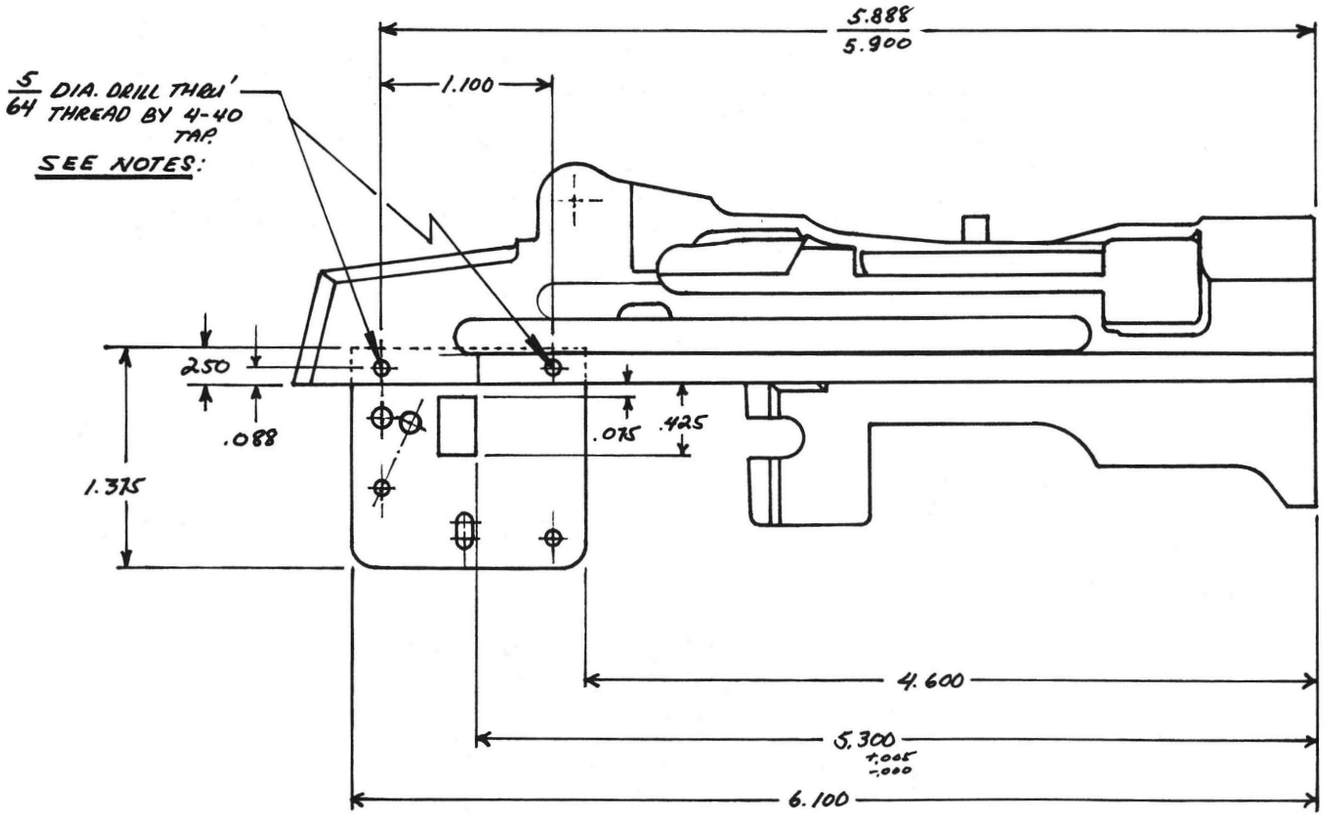

SCALE: APPROX.

* MUST FIT TIGHTLY TO WIDTH OF GROOVE WITHOUT PLAY.

ASSEMBLY: CONNECTOR MOUNT PLATE TO RECEIVER

NOTES:

1. ANNEAL PART OF RECEIVER TO BE DRILLED IF RECEIVER IS HARDENED.
2. REMOVE REAR SIGHT & BOLT STOP GROUP BEFORE ANNEALING.
3. WRAP PORTION OF RECEIVER THAT IS NOT TO BE DRILLED WITH WET CLOTH BEFORE HEATING RECEIVER TO PREVENT THE HEAT FROM PENETRATING OTHER AREAS THAT ARE CRITICAL LIKE BOLT LUG SEAT & BARREL.
4. WHEN DRILLING THE FRONT HOLE MAKE SURE TO INSERT A SMALL METAL PLATE * ON THE SMALL GROOVE WHERE THE SLIDE RETAINING LUG TRAVELS. THIS IS NECESSARY TO PREVENT THE DRILL FROM BREAKING OFF OR MISALIGNING ITSELF ONCE IT PENETRATES THE GROOVE. USE A SMALL "C" CLAMP OR VISE GRIP PLIER TO HOLD THE SMALL PLATE METAL TO THE GROOVE TIGHTLY WHILE DRILLING THE HOLE. ALWAYS START WITH SMALLER DRILL.

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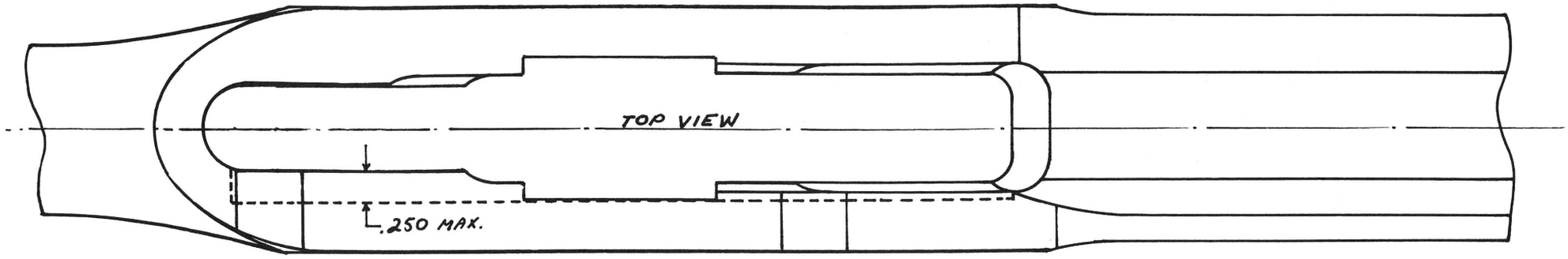
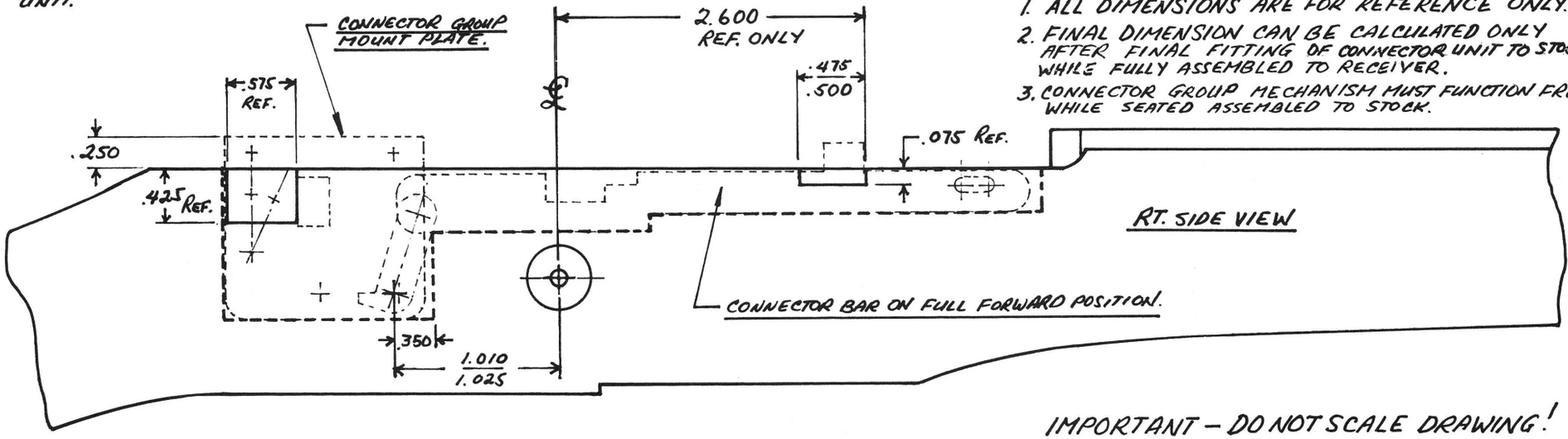
STOCK MODIFICATION FOR CONNECTOR UNIT



4. HEAVY DOTTED LINES REPRESENT AREAS TO BE REMOVED TO SEAT CONNECTOR UNIT.



NOTES:

1. ALL DIMENSIONS ARE FOR REFERENCE ONLY.
2. FINAL DIMENSION CAN BE CALCULATED ONLY AFTER FINAL FITTING OF CONNECTOR UNIT TO STOCK WHILE FULLY ASSEMBLED TO RECEIVER.
3. CONNECTOR GROUP MECHANISM MUST FUNCTION FREELY WHILE SEATED ASSEMBLED TO STOCK.

IMPORTANT – DO NOT SCALE DRAWING!

SCALE: APPROX.

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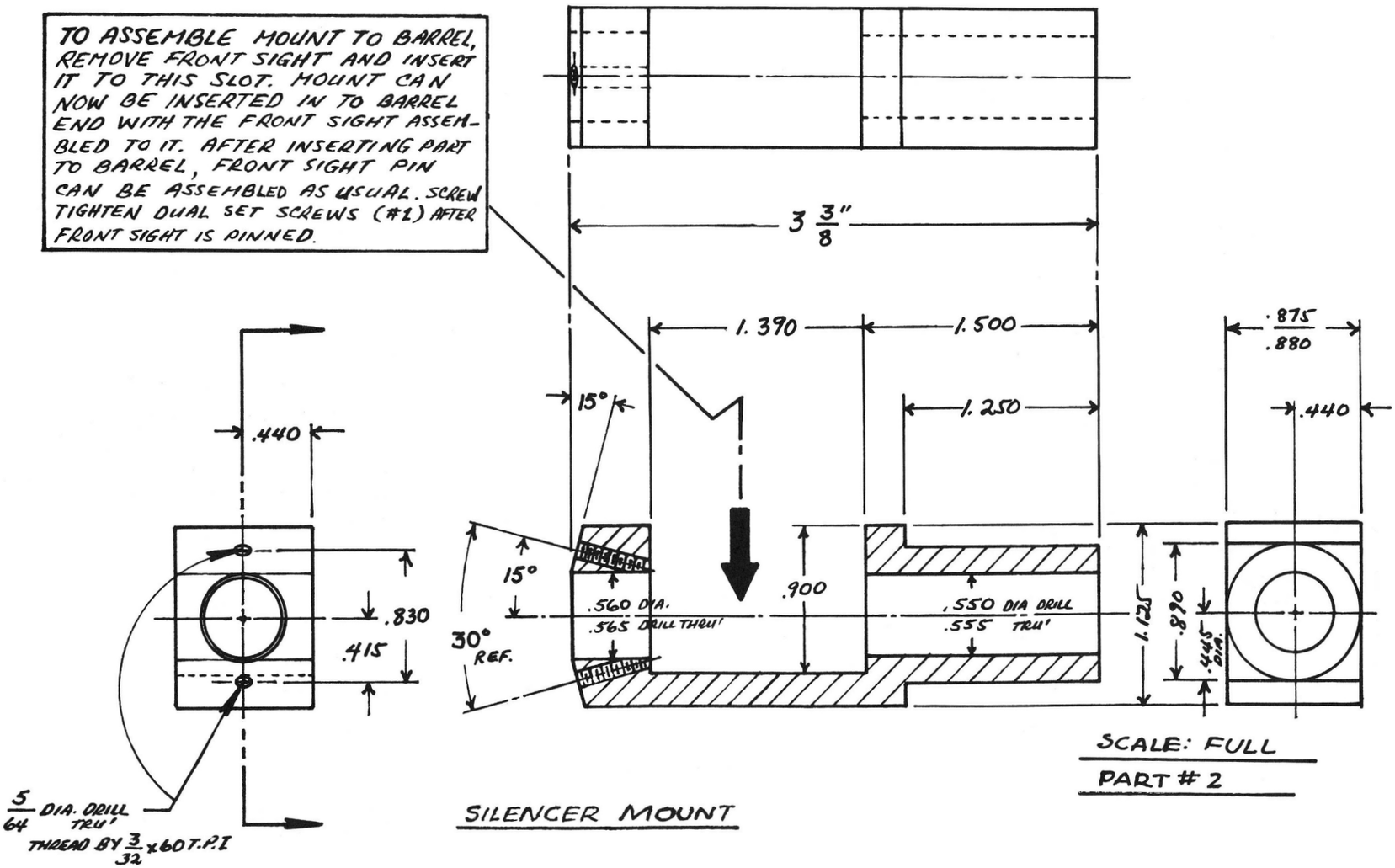
SILENCER DRAWINGS



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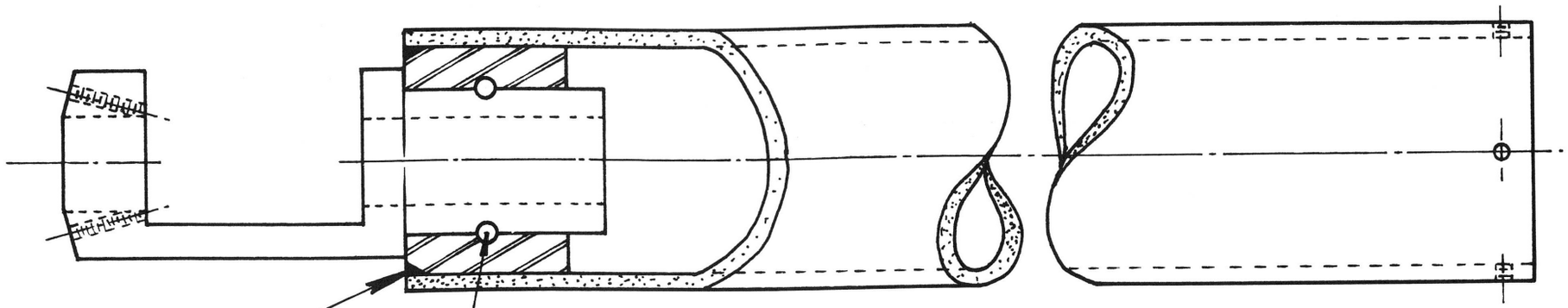
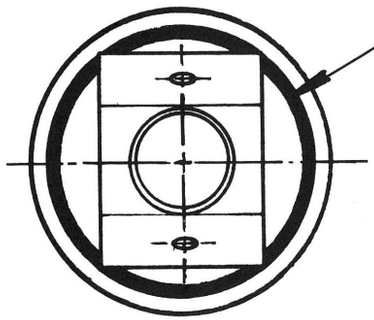
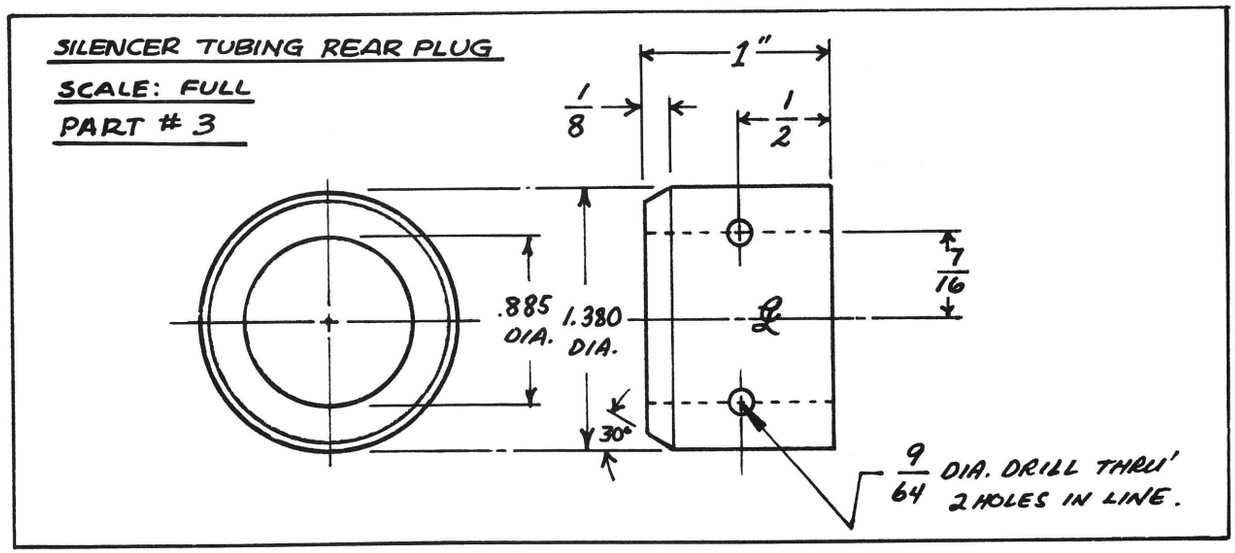
ASSEMBLY - REAR PLUG, SILENCER MOUNT & TUBING



DUAL MOUNT ASSEMBLY PINS ARE TO BE DRIVE FITTED.

WELD OR BRAZE AROUND CHAMFER





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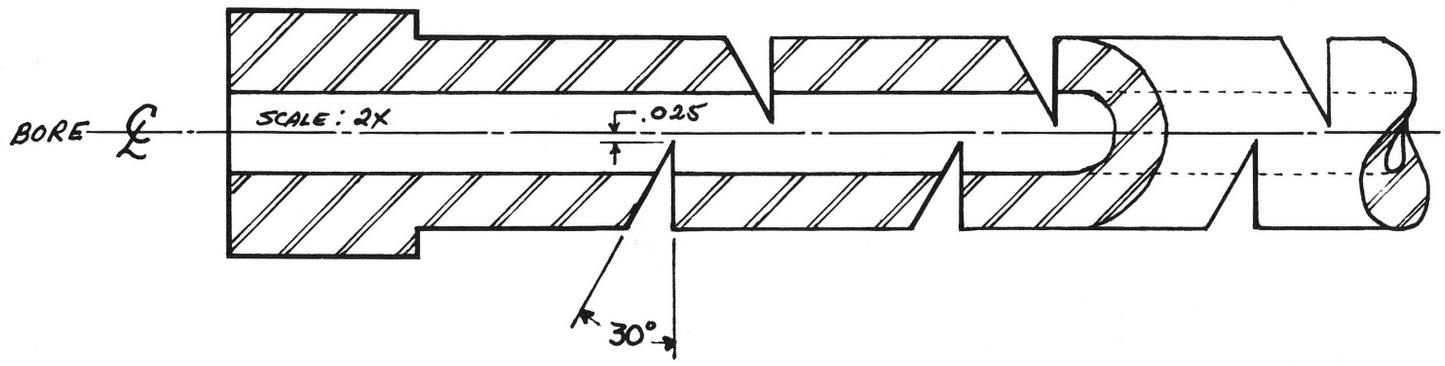
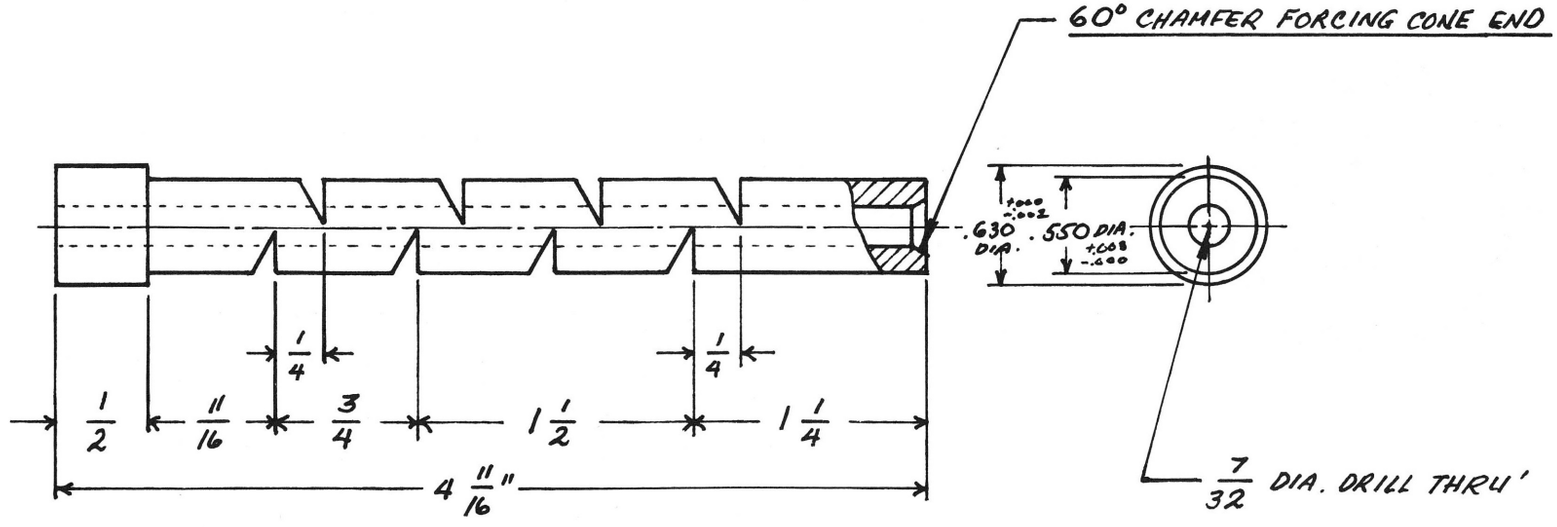


PART # 4



SCALE: FULL

BARREL EXTENSION

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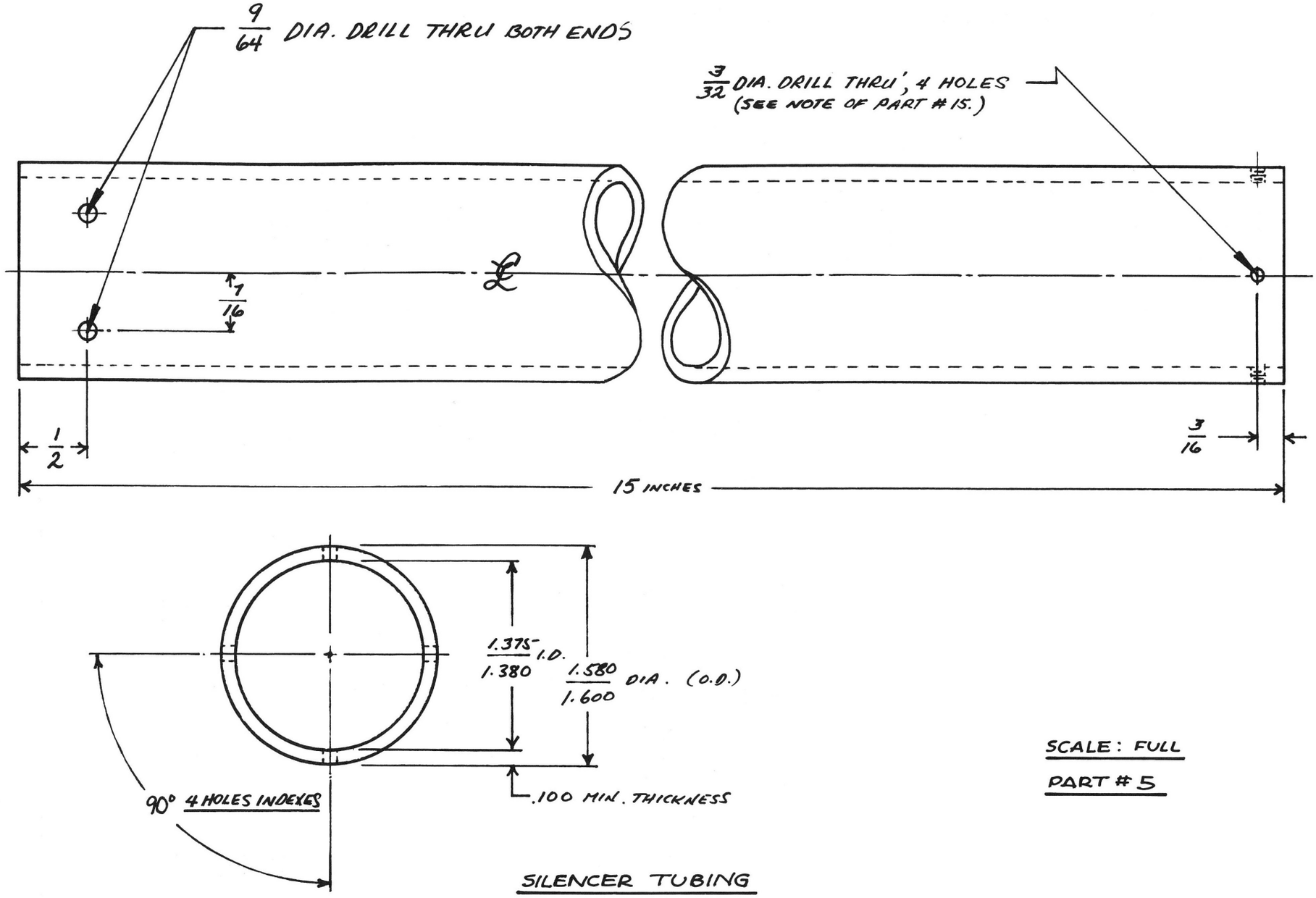

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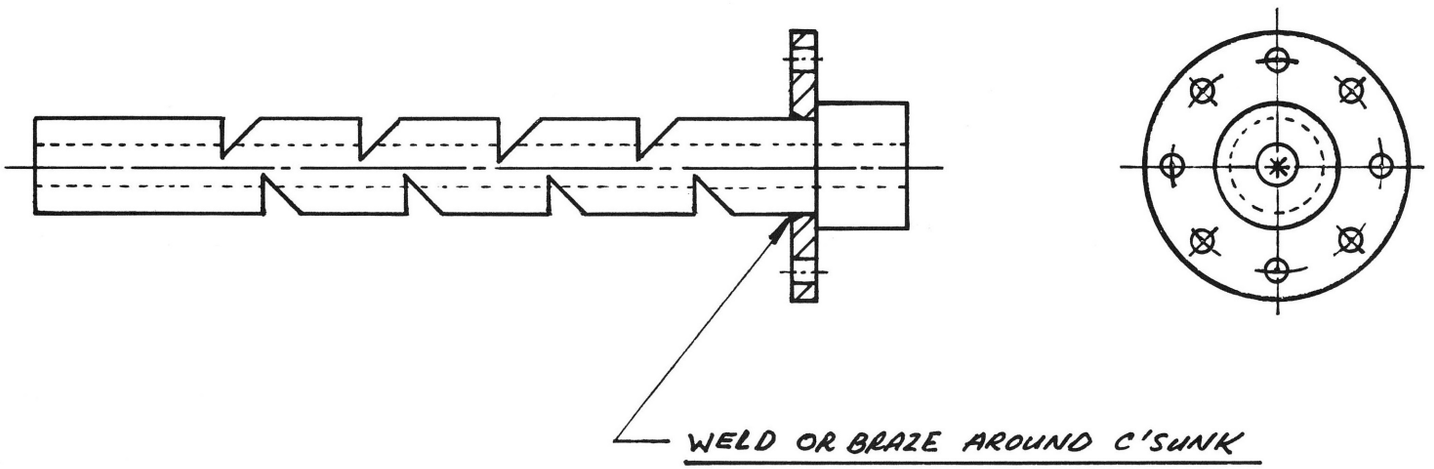
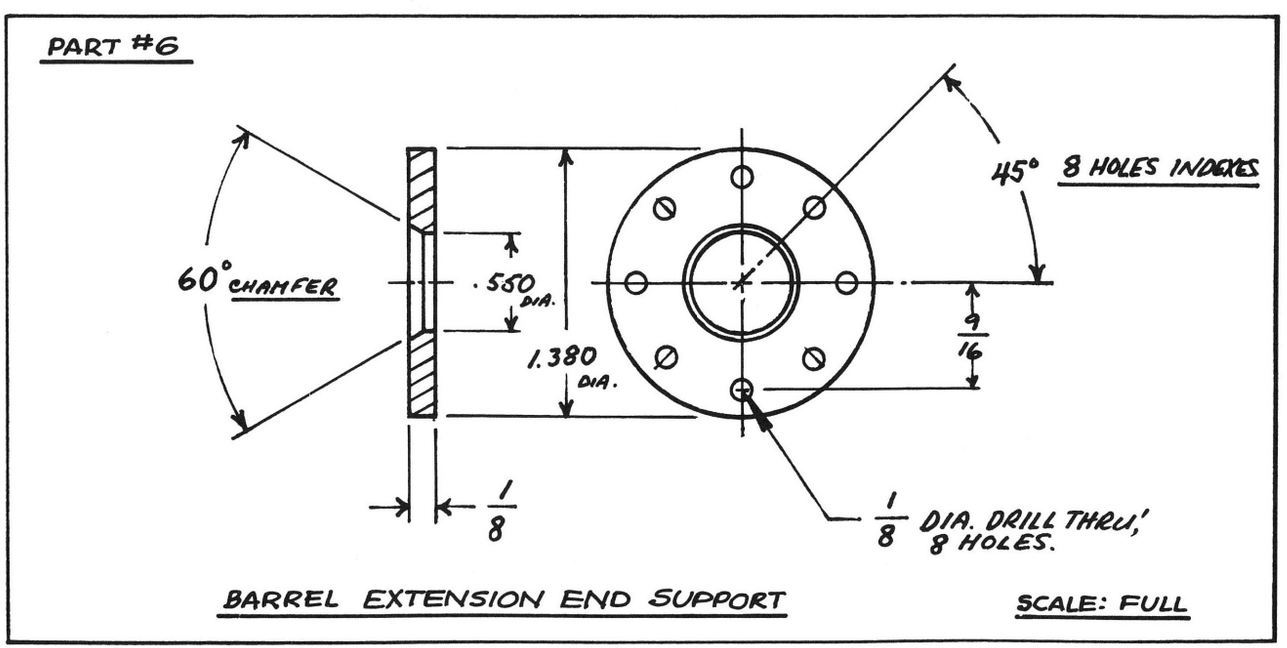
ASSEMBLY - BARREL EXTENSION & END SUPPORT





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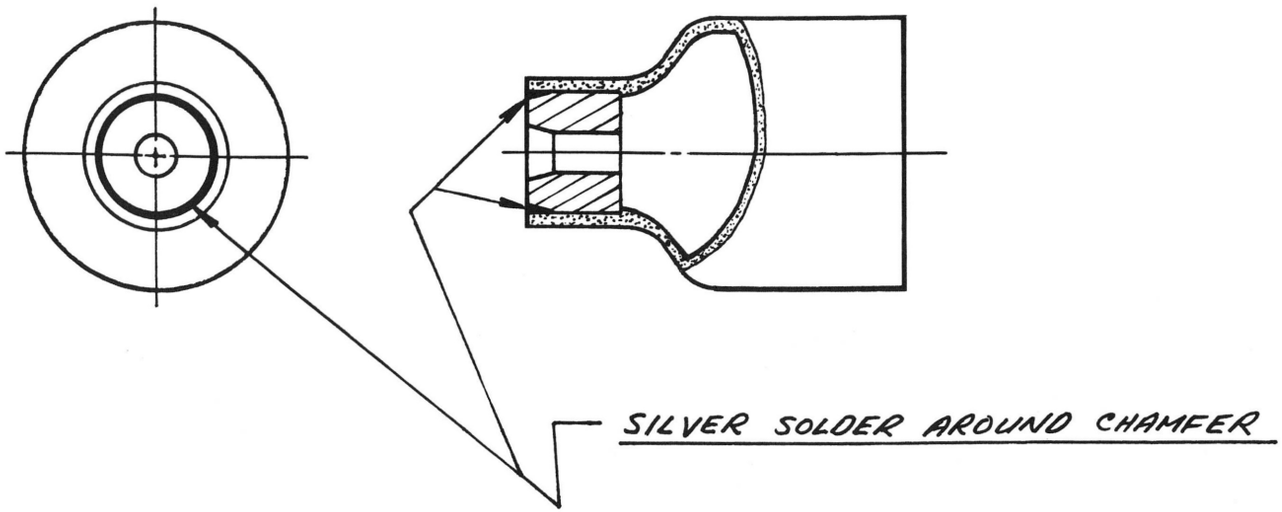
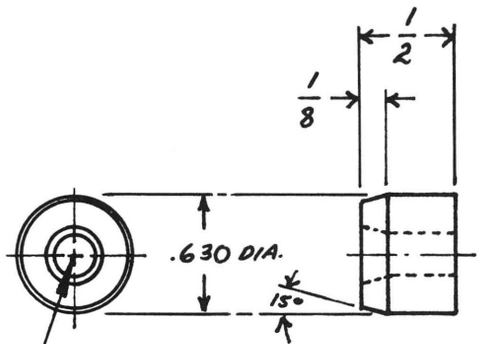
ASSEMBLY - GAS TRAP SLEEVE & BUSHING (4 SUB UNITS REQUIRED)



PART #7



SCALE: FULL

15/64 DIA. DRILL THRU', C'SINK BY 30°, 1/8 DEEP.

GAS TRAP SLEEVE BUSHING

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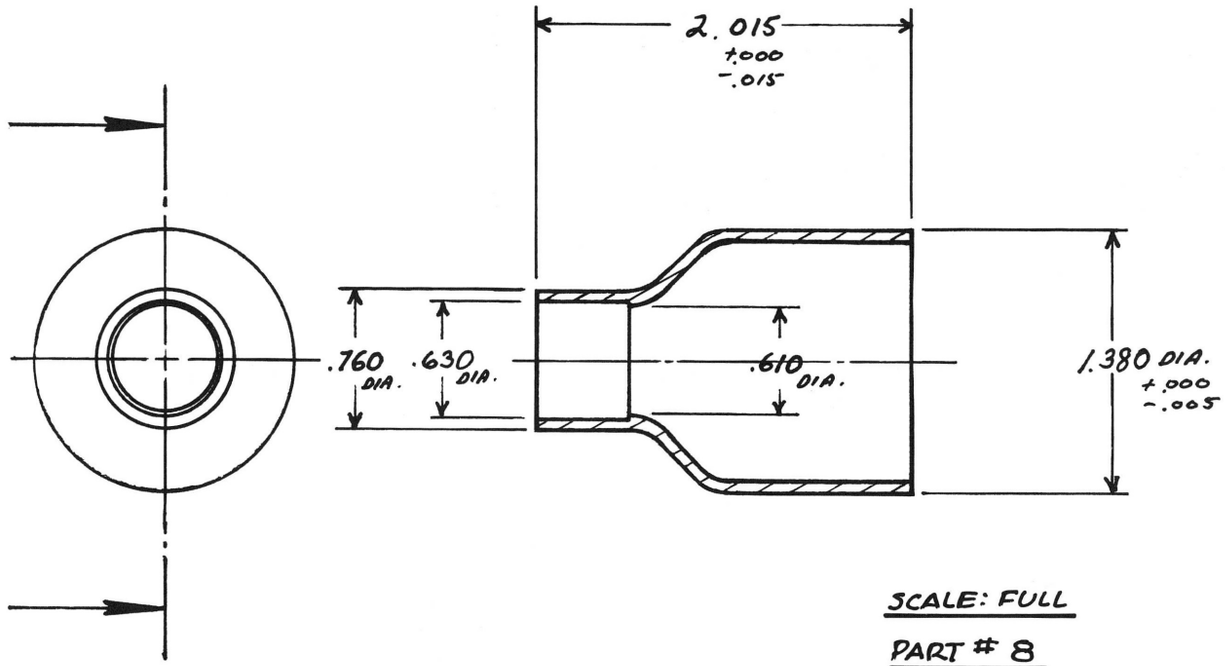

SCALE: FULL

PART # 8

NOTE: THIS PART IS A STANDARD $1\frac{3}{8}$" BELL PIPE REDUCER AVAILABLE AT MOST HARDWARE & PLUMBING SUPPLIES. COMMONLY MADE OF BRASS.
(6 PIECES REQUIRED, 5 TO BE USED FOR GAS TRAP SUBUNIT CONSTRUCTION.)

GAS TRAP SLEEVE

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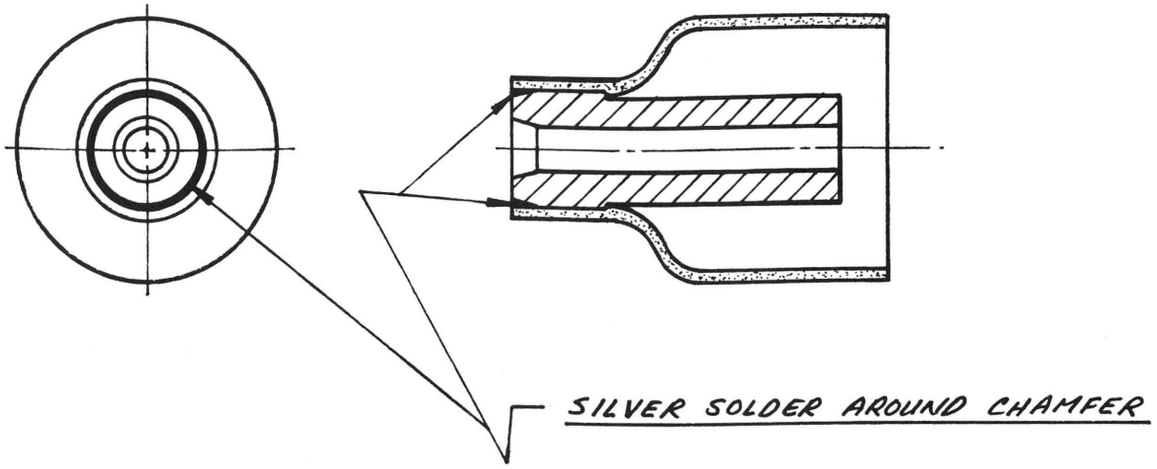
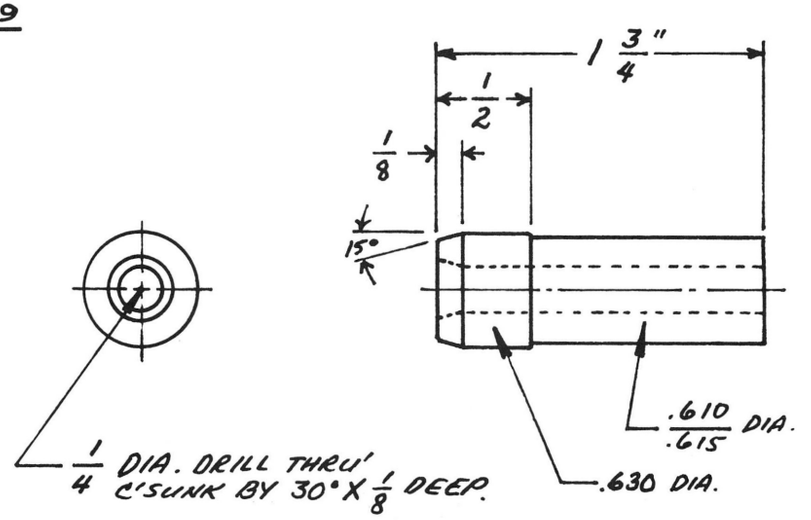
ASSEMBLY - FRONT END GAS TRAP & END CAP (1 SUB UNIT REQUIRED)



PART #9



SCALE: FULL

FRONT END GAS TRAP SLEEVE BUSHING

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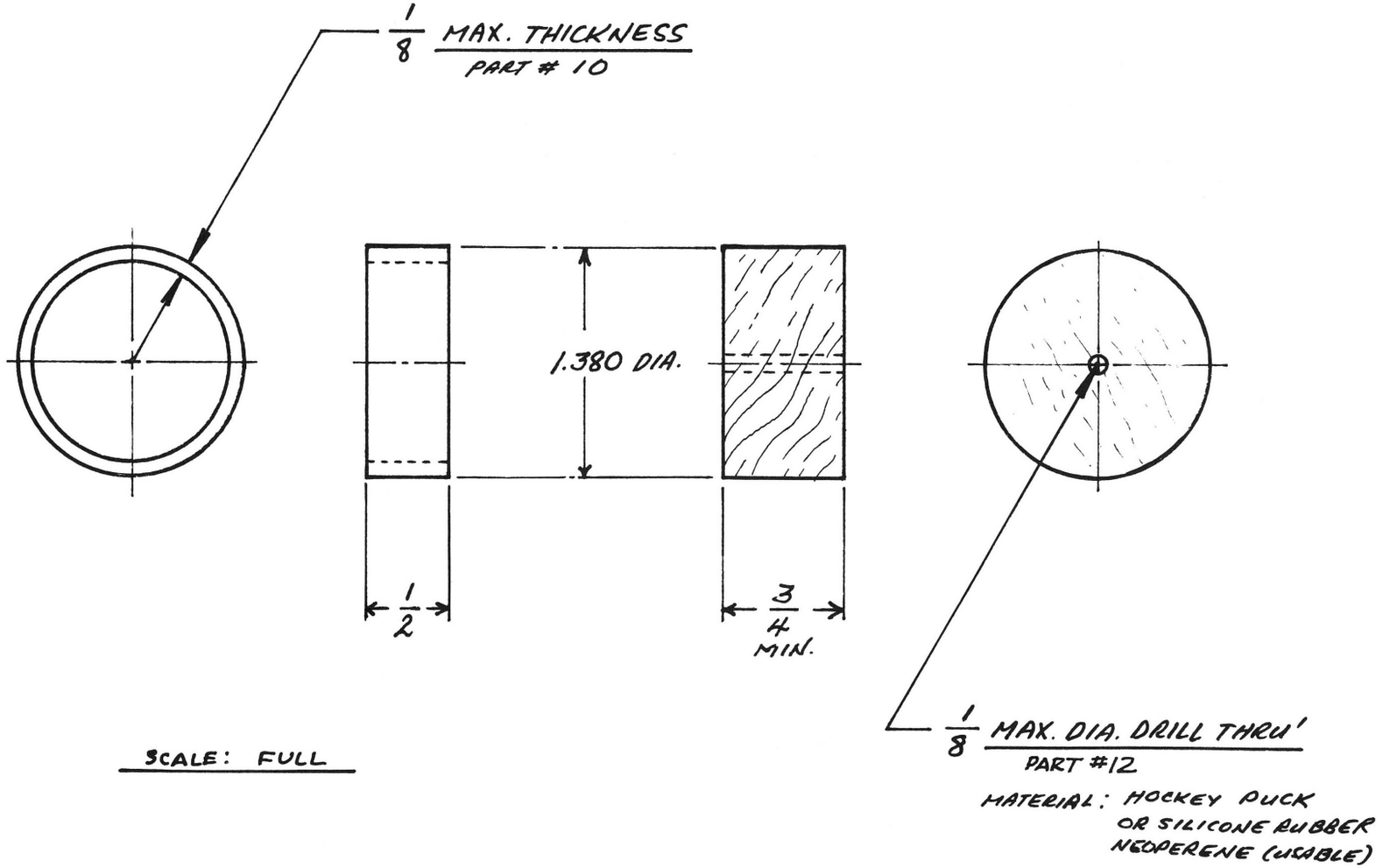

SCALE: FULL

BAFFLE SPACER & RUBBER BAFFLE

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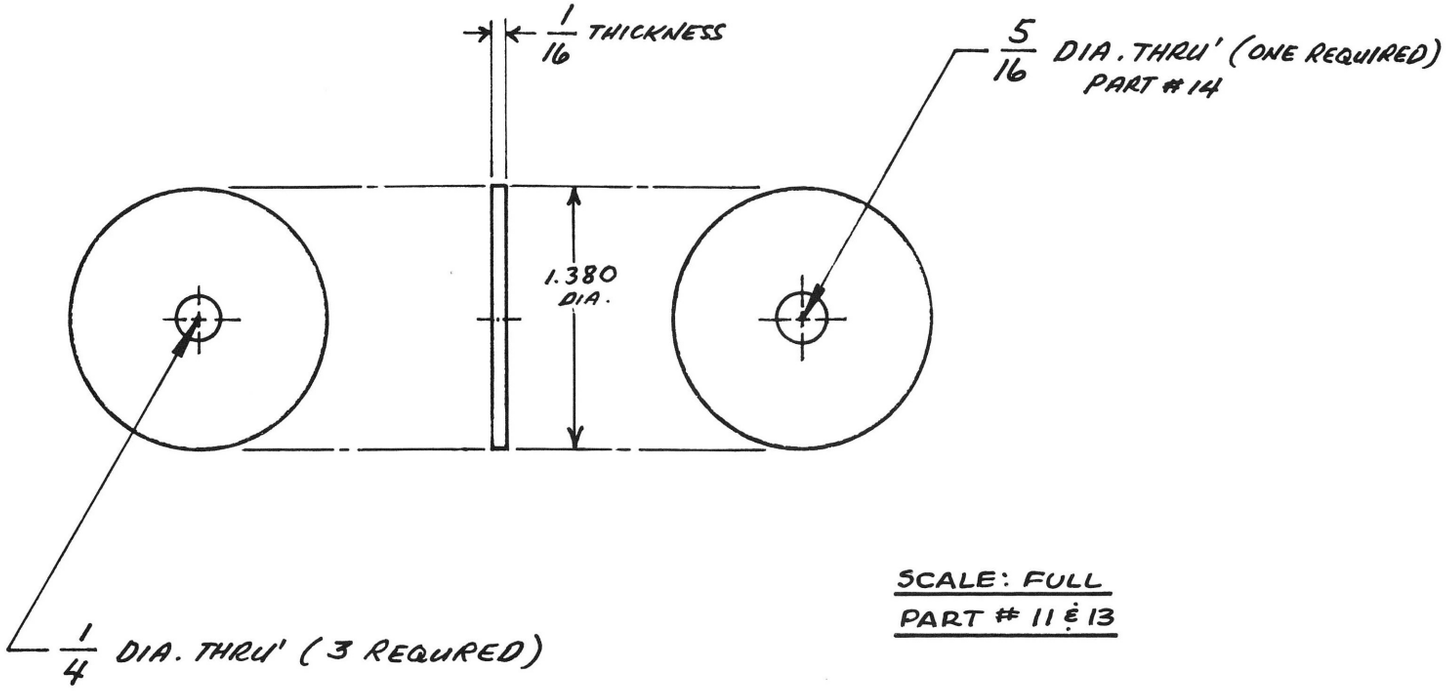

BAFFLE DISK

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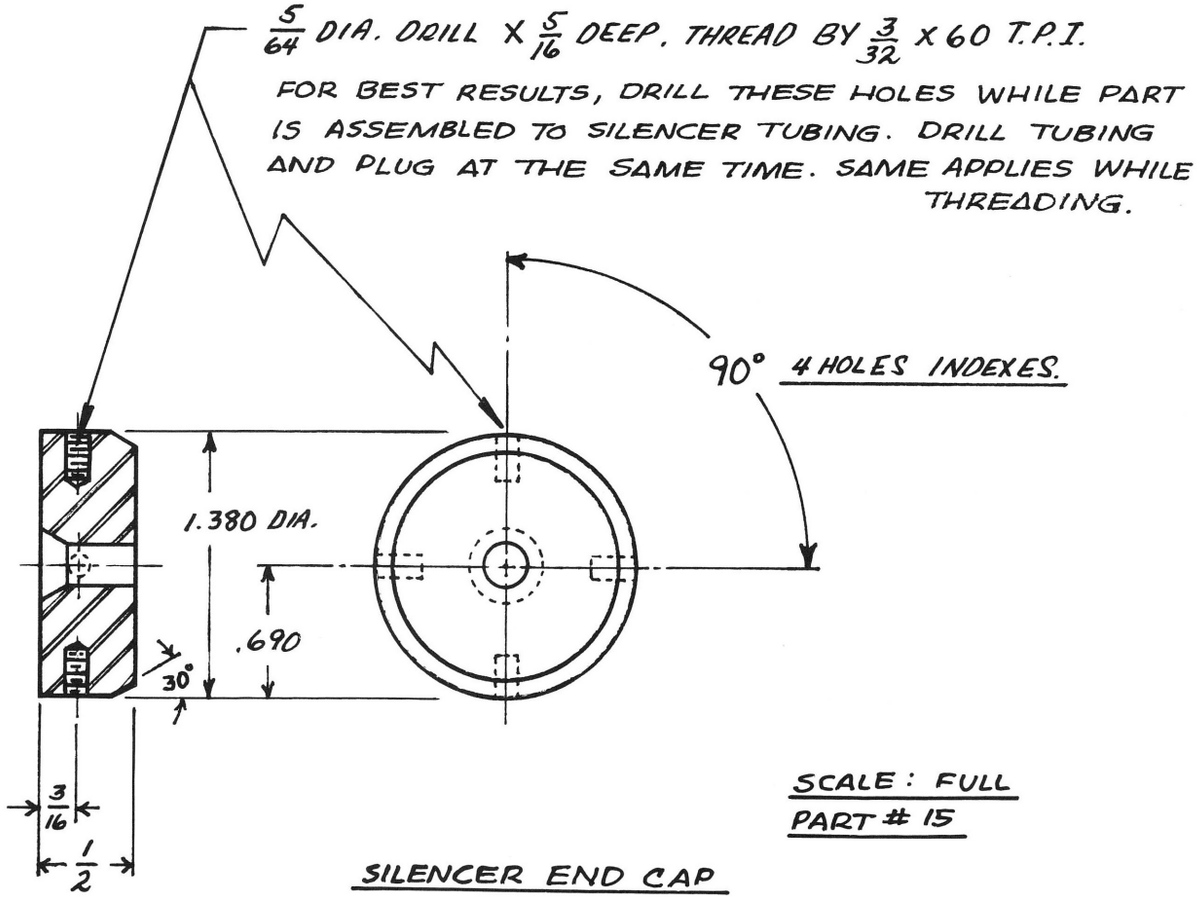
5/64 DIA. DRILL X 5/16 DEEP, THREAD BY 3/32 X 60 T.P.I.
FOR BEST RESULTS, DRILL THESE HOLES WHILE PART IS ASSEMBLED TO SILENCER TUBING. DRILL TUBING AND PLUG AT THE SAME TIME. SAME APPLIES WHILE THREADING.
90° 4 HOLES INDEXES.
1.380 DIA.
.690
30°
3/16
1/2
SCALE: FULL
PART # 15
SILENCER END CAP

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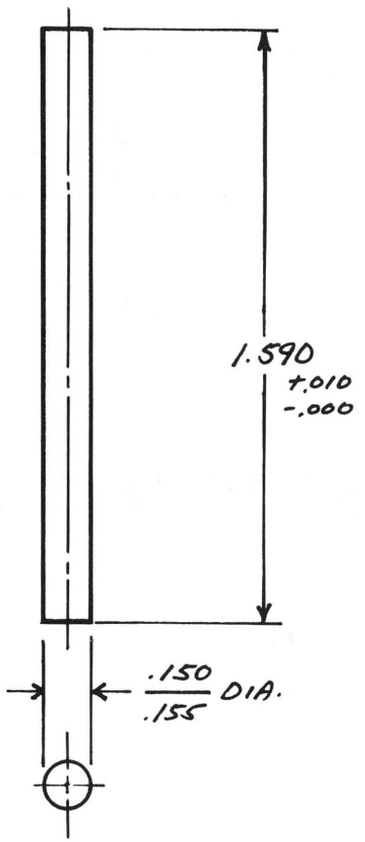
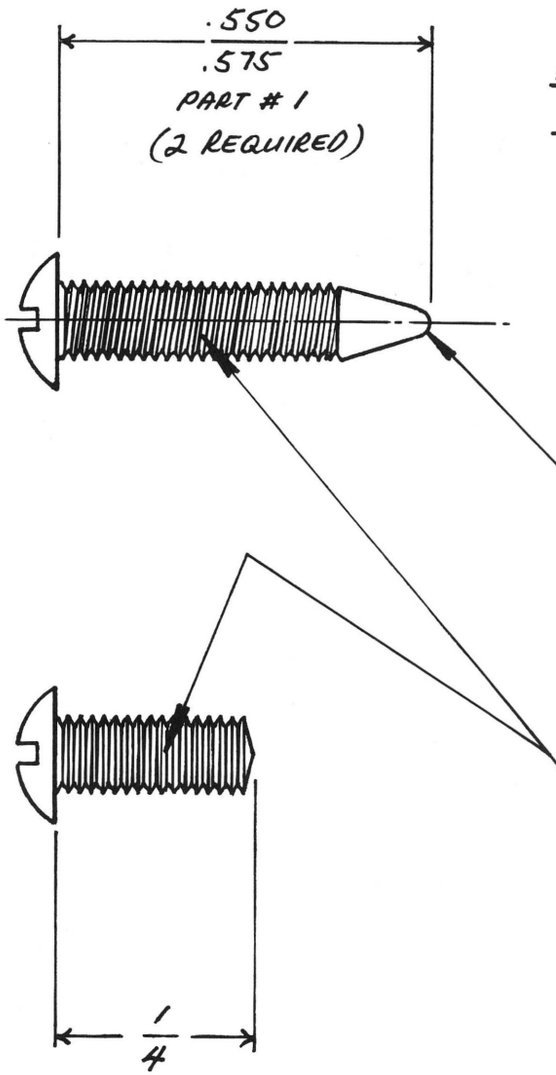
PART # 16 MOUNT ASSEMBLY PIN
(2 REQUIRED)



SCALE: 2X



PART # 14 (4 REQUIRED)

SCALE 4X

MOUNT TIGHTENING SCREWS & END CAP SCREWS

NOTE:
BOTH SCREWS CAN BE CUT & MODIFIED FROM STANDARD COMMERCIALLY PRODUCED 3/32 X 60 T.P.I X 3/4 LONG OR SHORTER ON PART # 14.

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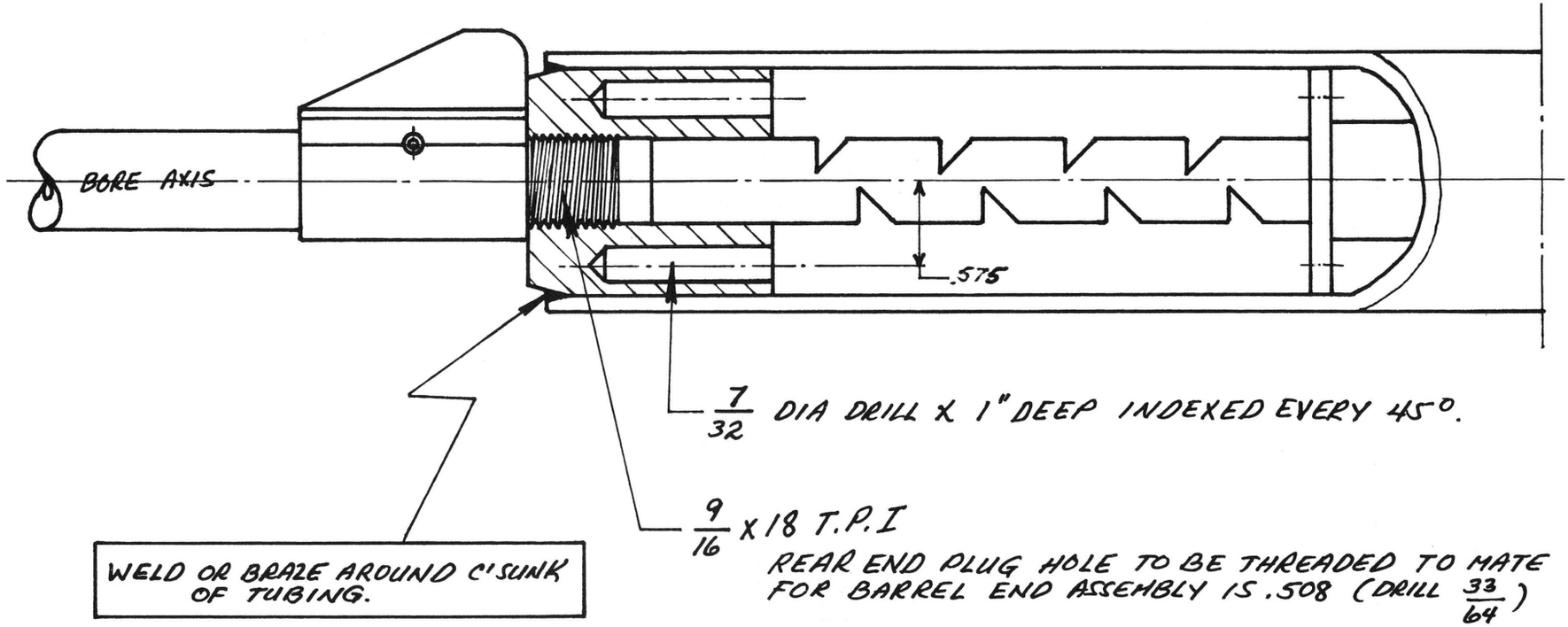
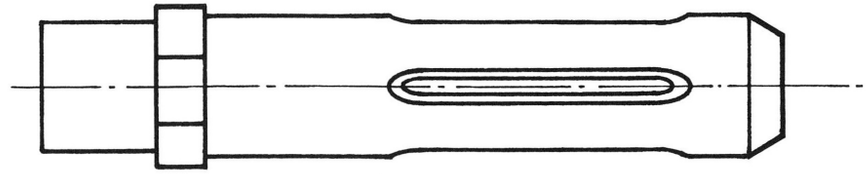

BORE AXIS
.575
7/32 DIA DRILL X 1" DEEP INDEXED EVERY 45°.
9/16 X 18 T.P.I
REAR END PLUG HOLE TO BE THREADED TO MATE FOR BARREL END ASSEMBLY IS .508 (DRILL 33/64)
WELD OR BRAZE AROUND C'SUNK OF TUBING.



SCALE: FULL

SCREW ASSEMBLED FLASH ELIMINATOR

SCREW ON ASSEMBLY TYPE - SILENCER UNIT

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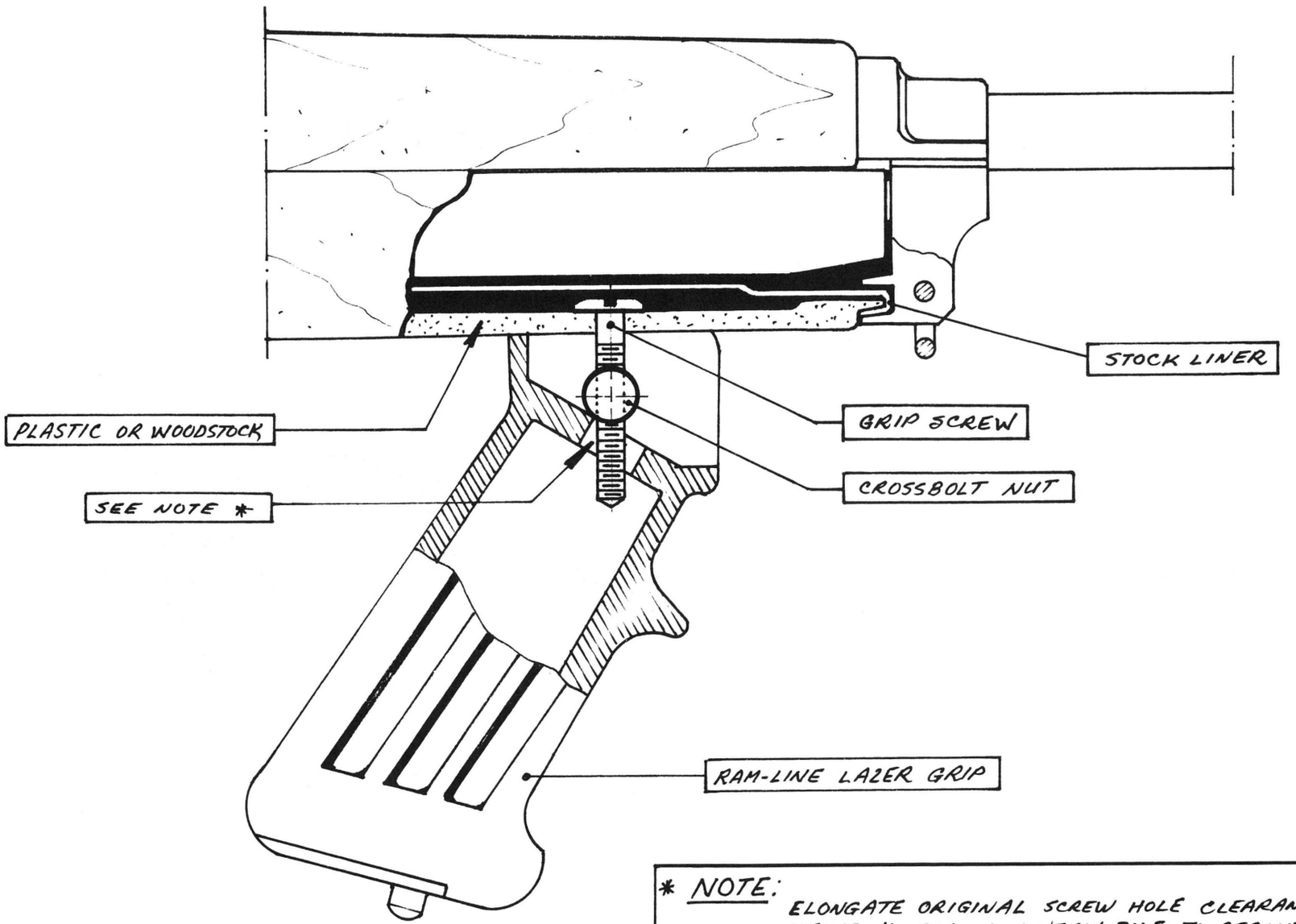
FRONT GRIP INSTALLATION FOR MINI-14



* NOTE: ELONGATE ORIGINAL SCREW HOLE CLEARANCE USING 1/4 DIA. CHAINSAW FILE TO PERMIT VERTICAL MOUNTING OF ASSEMBLY SCREW.

9. Mini-14 Configurations

The newly upgraded Mini-14 (bottom) utilizing Choate folding stock, Eagle International barrel shroud, and 35-round polymer magazine is shown with an Israeli-issue M14 auto rifle from which its design characteristics are inherited.

A Mini-14 with Choate and Eagle accessories. The new 35-round Eagle polymer magazines can be jungle clipped to provide a compact 70 rounds of firepower.

The upgraded Mini-14 is shown with its .22 LR brother, the 1022 carbine. The 1022 has a Choate folder combined with Ram-Line M16 look-alike sight kit and Eagle 30-shot plastic magazines.

A Mini-14 equipped with a Ram-Line polymer folding stock and clip-on bipod. The new MWG 90-round drum magazine provides maximum firepower in an LMG configuration. Choate Machine & Tool currently produces heavy gauge magazine connectors for popular military-type sporters including the Mini-14 and AR-15 rifles.

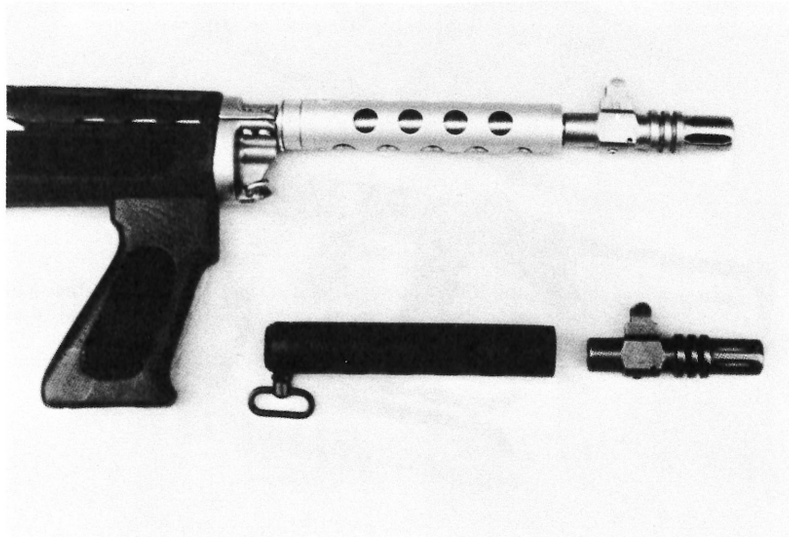
A Mini-14 equipped with an early Ram-Line wood and metal folding stock. This one has an optional front grip. Shown with the gun are Ram-Line AR-15/Mini-14 combo mags, flash hider, and clip-on bipod.

Mini-14 and 1022 rifles equipped with Ram-Line folders with optional front grips. The high-capacity polymer magazines and ventilated barrel shrouds are Eagle International innovations. Note the amazing "Autoloader" device from Ram-Line used to fill .22 caliber magazines in seconds.

A beautifully dressed Mini-14 with an "Ultralight" all-plastic Ram-Line folder, Eagle International ventilated barrel shroud, and M14-style flash hider. The 30-shot polymer magazines are Ram-Line innovations. These high-capacity magazines work flawlessly on both the Mini-14 and AR-15.

Ram-Line makes tough lightweight polymer folders for the Mini-14 and for the 1022 and AMT Lightning carbines (below).

A close-up view of the optional front grip installed by the author to the wood and metal folder originally produced by Ram-Line. This stock is no longer produced.



A close-up view of the Eagle International ventilated barrel shroud and Choate M16-style flash hider with M14-style sight built onto it. These accessories are available in both stainless or blued steel to match the gun's finish. Note the optional front grip mounted on Choate's Zytel folder.

This bullpup-style replacement stock for the Mini-14 is produced by Bullpup Industries.

The "Bullpup" Mini-14 equipped with a MWG 90-round drum magazine. A much better bullpup-style stock is currently marketed by Muzzelite Corporation for both the Mini-14 and 1022 rifles and is highly recommended by the author for those who opt for this configuration. Overall length is only 26 1/2 inches with a full-length barrel.

10. Parts and Accessories Directory

Since the introduction of independently produced aftermarket accessories for the Mini-14 rifle some ten years ago, the author has conducted extensive evaluation of the reliability, overall quality, and affordability of Mini-14 accessories.

Listed below are independent producers who have come up with many excellent accessories for the Mini-14, ranging from folding stocks, high-capacity magazines, barrel shrouds, flash hiders, detachable scope mounts, bipods, and many other items which one may find useful in certain applications. For your home shopping convenience, you can contact the companies at the following addresses:

CHOATE MACHINE & TOOL COMPANY
P.O. Box 218
Bald Knob, AR 72010
(501) 724-6193

EAGLE INTERNATIONAL, INC.
5195 West 58th Avenue
Arvada, CO 80002
(303) 426-8100

MUZZELITE CORPORATION
P.O. Box 100
Junction City, WI 54443
(715) 457-2431

RAM-LINE, INC.
15611 West 6th Avenue
Golden, CO 80401
(303) 279-0886

MWG COMPANY
10651 S.W. 185 Terr.
Miami, FL 33157
(305) 253-8393

The Mini-14 Exotic Weapons System

Calling all Mini-14 owners! Learn how to convert the Mini-14 into a full-auto, silenced, SWAT-type weapon that is capable of field-clearing firepower.

Note that this conversion process requires no machining or special tools. Once completed, it takes just five minutes to drop in the Automatic Connector (the book's secret!) or remove it as needed. It's that simple. This revised edition includes new photos and updated information on the latest models of the Mini-14. *The Mini-14 Exotic Weapons System* is presented for historical and reference purposes only.

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